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MARCH 2019

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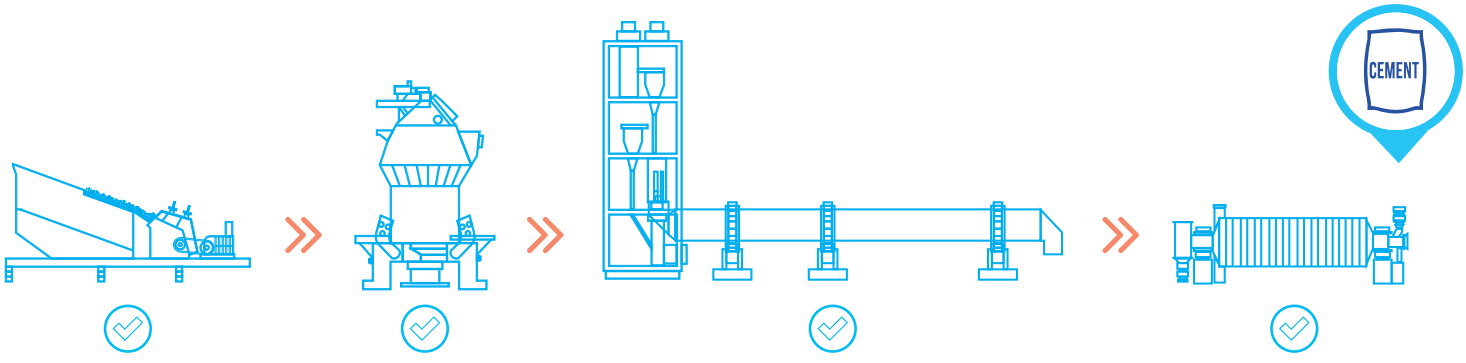

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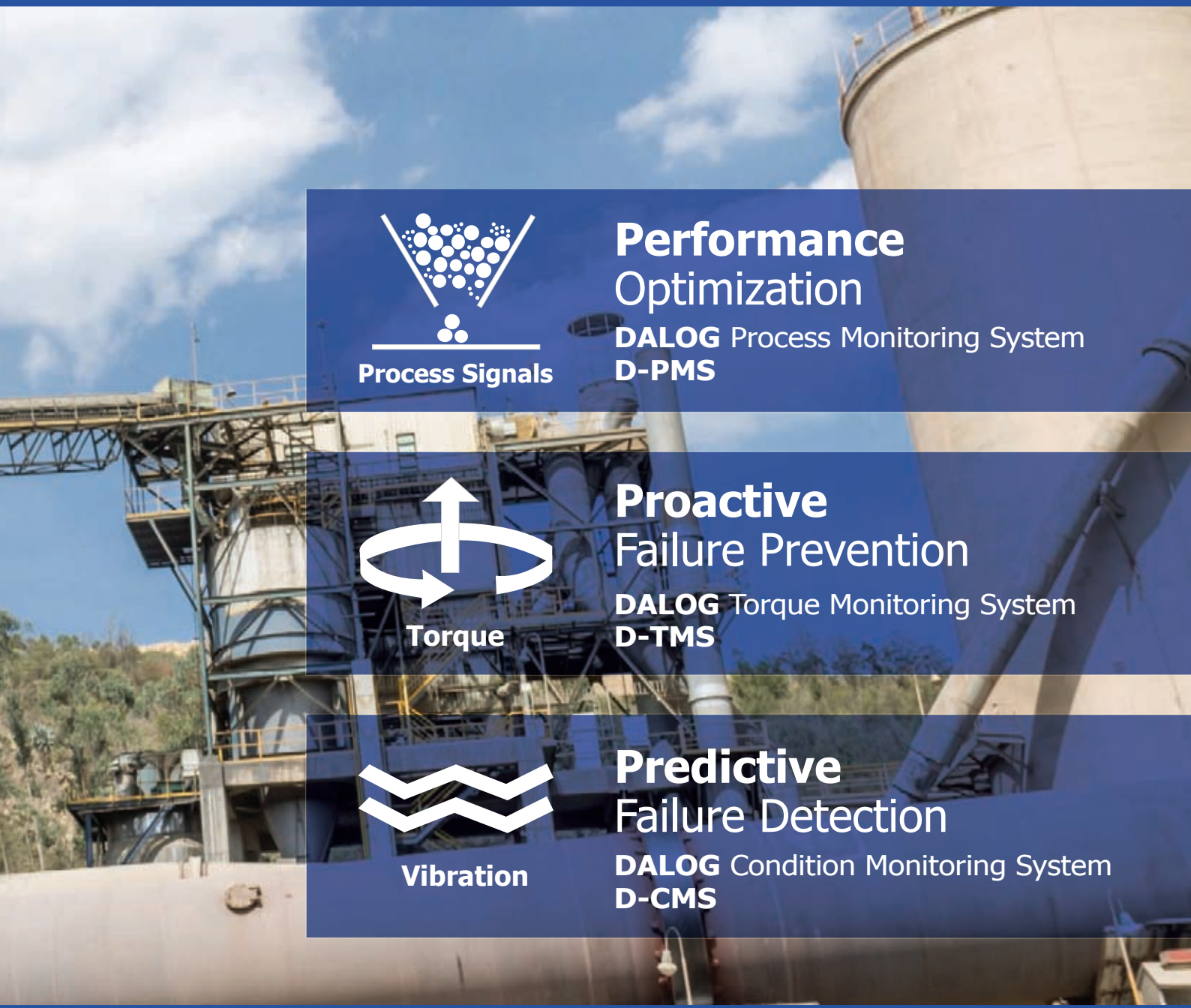

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Dear readers,

Welcome to the March 2019 issue of our *Global Cement Magazine* - the world's most widely-read cement magazine! This issue will be distributed to all delegates at the forthcoming 14th *Global Slag Conference & Exhibition* in Aachen, Germany, on 26-27 March 2019.

Accordingly, this issue contains our now-annual catch-up with Charles Zeynel from slag trader and marketer ZAG International (Page 18). While on the surface one could argue that little has changed in slag supply-demand dynamics and pricing over the past 12 months, some interesting 'sub-plots' have developed. Chief among them, cement sector buyers of slag seem to have had enough of the increasingly high prices that steel manufacturers are charging. The trouble is that cement producers are in a sellers' market, and one in which slag (and fly ash) supplies are generally falling. Whether cement producers can collectively 'stare-out' the steel makers until they regain some control over prices remains to be seen.

There are two further interviews in this issue that share a number of themes, both with the ZAG Interview and each other. The first of these is with Koen Coppenholle, the Chief Executive of CEMBUREAU, the European Cement Association (Page 10). The discussion covers the association's new 5C approach (**C**linker, **C**ement, **C**oncrete, **C**onstruction & Built Environment and (re)**C**arbonisation) to lower CO_2 emissions, as well as competition from steel and wood, low clinker cements and the EU Emissions Trading Scheme (ETS). We also hear from senior board members at lime producer Carmeuse, which has recently established its own lime engineering subsidiary TECforLime to offer technical assistance to the many operators of captive lime plants around the world. Many such plants are in the steel sector. The discussion also covers global lime trends, new technologies, as well as the possible impacts of the EU ETS on the lime (and steel) sector in Europe. Turn to Page 14.

Elsewhere, this issue also carries technical contributions on modular grinding plants in the EU (Page 24), dust suppression during hopper loading (Page 28) and chains (Page 31). Our regional report heads to North Africa (Page 54), while, as always, our news pages carry the most relevant and up-to-date news from around the global cement sector.

We hope you enjoy this issue of *Global Cement Magazine*!

PEdwards

Peter Edwards
Editor

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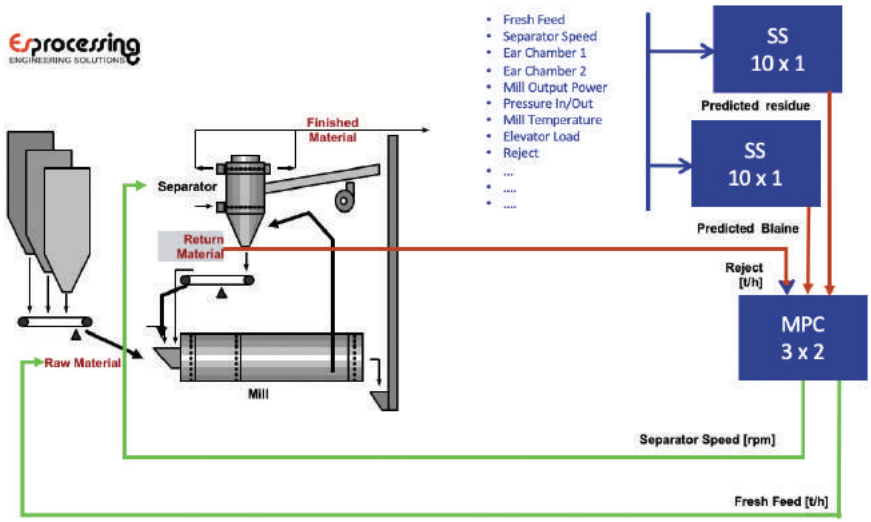

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Interview by Robert McCaffrey, Global Cement Magazine

In discussion: CEMBUREAU's 5C Approach with Koen Coppenholle

Global Cement recently caught up with CEMBUREAU's Chief Executive Koen Coppenholle to discuss the association's 5C Approach to mitigating CO_2 emissions and wider trends in cement sector sustainability...

Above: Koen Coppenholle has been Chief Executive of CEMBUREAU, the European Cement Association, since 2012.

***Global Cement (GC):* What is the 5C approach?**

Koen Coppenholle (KC): The 5C approach looks at the cement sector's carbon footprint down the value chain, at what we can do with respect to: **C**linker, **C**ement, **C**oncrete, **C**onstruction and built environment and (re)**C**arbonation. It builds on CEMBUREAU's 2013 roadmap.

Now with 5C, we see concrete as part of the whole construction agenda. This approach looks at our footprint through the lifecycle of our activities. This considers not the lifecycle of each product stage-by-stage, but the lifecycle of the end product, the built environment itself.

***GC:* Why was concrete finally included and what caused that change?**

KC: We initiated The Concrete Initiative, which is a project that we set up with our colleagues in the aggregates business and the precast and ready-mixed concrete industry. In the end, the cement sector ultimately makes concrete. It is concrete that competes with steel, wood and other materials, not cement.

Of course, we are aware that the cement manufacturing process is energy- and CO_2 -intensive. We will not try to argue against that. However, when concrete is used it offers benefits in terms of thermal mass, durability, fire safety, energy efficiency and recarbonation.

These were previously completely left out of the picture. The fact that cement comprises a relatively small proportion of the finished product is important. We saw that the whole 'concrete story' needed to be told.

Below: The 5C approach looks at reducing CO_2 emissions across clinker, cement, concrete, construction, and (re)carbonation.

***GC:* When you promote the 5C approach, who are you trying to persuade?**

KC: As a lobbying organisation, policymakers are our main target audience. We try to convince them that, when they develop policies, they need to consider the full supply chain, especially when it comes to energy-efficiency and climate change. We also want to reach out to universities, architects, engineers and specifiers as partners in the 5C approach.

***GC:* What about the general public?**

KC: We do not generally focus on influencing the general public. However, our social media presence does end up spreading far and wide, both in the cement sector and beyond.

***GC:* Does concrete really offer value for money compared to substitute materials?**

KC: I think it does in the sense that, first of all, you have to look at the durability of concrete. The fact is that concrete structures are built to last for 70-100 years. Certainly in Europe, more and more buildings are being refurbished several times to give them new leases of life. However, the concrete structure generally remains, which represents a significant cost and CO_2 saving compared to ripping the building down and starting again.

We need to advocate the need for life-cycle thinking along the built environment value chain and rebuff allegations made by some stakeholders, including public authorities, that timber is a low-CO_2 alternative to concrete. This approach is really short sighted in terms of lifecycle analysis. It is important to consider the full picture if you want to enable the low carbon transition. Another important point is that concrete is critical to the kinds of structures that enable us to generate low-CO_2 energy, for example in wind turbines and hydroelectric dams.

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Above: Coppenholle says that the EU Emissions Trading Scheme (ETS) has a 'stringent' benchmark.

***GC:* At some point, if the CO_2 permit price hits Euro50/t, could it be argued that cement and concrete still offer value for money compared to other materials?**

KC: So far, the cement producer has always swallowed the CO_2 cost at its manufacturing sites. It has been very difficult to pass it downstream. The rising CO_2 cost impacts disproportionately on our business. It's not like the electricity sector, which has been able to pass on its rising costs to the cement producer. A value chain approach, applied to all materials, is a possible way forward.

***GC:* Wouldn't it be fair to say that having to pay for CO_2 emissions permits, as in the EU Emissions Trading Scheme (ETS), is quite a good way of charging for those emissions?**

KC: This approach only considers the CO_2 emissions of the cement manufacturing process. The cement producers don't gain back any credits for the CO_2 that their product saves in the latter parts of the supply chain and the building lifecycle. I've already mentioned many benefits of using concrete for the building structure. To this we can add things like the fact that concrete buildings demand lower levels of heating or air conditioning than ones made from steel or wood. This saves on ongoing CO_2 emissions.

***GC:* Are there some applications in which cement and concrete can't really be substituted by other materials?**

KC: Foundations are the best example of this. Even timber-framed houses will have concrete foundations. Another example is large infrastructure projects like bridges. Many would be impossible to make in anything other than concrete. How could we build the Øresund Bridge or the Channel Tunnel with just wood?

***GC:* Let's talk about the 5th C: (Re)Carbonation. How much CO_2 can be taken up by concrete?**

KC: Depending on the methodology, it's up to 25% of the process emissions over the lifetime of a building and end-of-life. It's significant. Think of cities reabsorbing quite a lot of CO_2 and becoming effective carbon-sinks.

Wider discussions

***GC:* If researchers are successful in their quest to develop alternative cement chemistries, can you see the European cement makers switching over?**

KC: The European cement sector is a major mover in this research and is continuously focused on reducing the clinker content in cement and on delevoping new low-CO_2 binders. This remains the most obvious route to low-CO_2 cements. Of course, there needs to be further activity in this area due to climate-change. However, we need to also ensure that the durability and strength are maintained as the clinker factor falls.

***GC:* As the Global Cement & Concrete Association (GCCA) is only open to clinker producers and Cembureau is suggesting to lower the clinker factor, does that put the two at cross-purposes?**

KC: I think that we'll always need to have clinker in the mixture, so we need to keep clinker producers in Europe. The clinker factor in the EU is around 75-76%. We want to hit 70% by 2050.

***GC:* Do you agree with the administration of the EU ETS?**

KC: Our position is one of mixed feelings. As I mentioned the ETS only considers cement production. The benchmark is also very stringent, based on the average of the best-performing 10%. The positive thing, which Cembureau lobbied for, is that the EC accepts there should be carbon leakage protection for energy-intensive industries. Compared to other countries, the EU is at a disadvantage. This is compounded by the higher power costs here. That puts us on an uneven playing field.

***GC:* Do you 'believe' in climate change?**

KC: Yes. It is clear that this is happening and we have to respond. The response will require action from all parties, including the general public. It has historically been easy to attack industry as a way of passing the buck. However, at the end of the day, everyone has to pay the costs of mitigating the associated CO_2 emissions, which come not only from industry but from transport, households and agriculture.

***GC:* Thank you for your time today.**

KC: You are very welcome!

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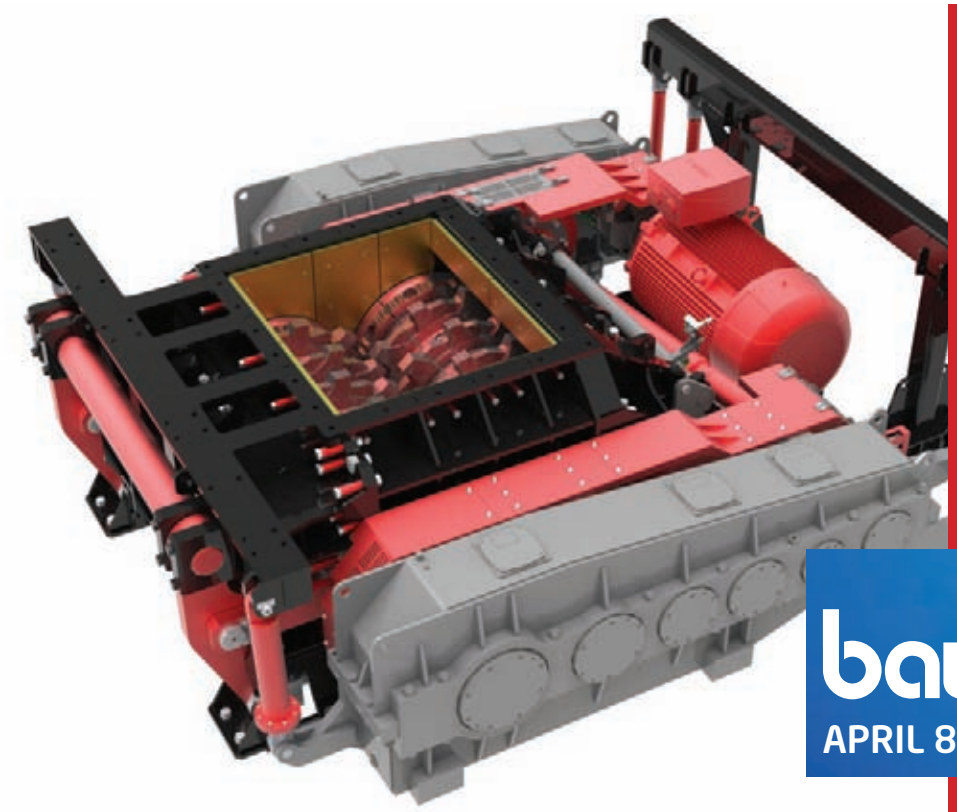

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Interview by Robert McCaffrey, Global Cement Magazine

In discussion: Lime engineering and trends with Carmeuse and TECforLime

Carmeuse is a lime products manufacturer that was founded in Belgium in 1860. Initially operating in Belgium, where it brought together a number of independent lime quarries, Carmeuse started to expand in the 1980s. At first this included France, the Netherlands and Italy, before expansion to the US and Canada. During the 1990s, the group continued to grow into Turkey and West Africa, followed by Central Europe in the 2000s and the Middle East and Asia in the 2010s. Still family-owned, Carmeuse is worth around Euro1bn and delivers ~10Mt/yr of lime products to its customers, from 90 lime plants and 50 quarries around the world. Here, *Global Cement* speaks with Danielle Knott and Bernard Maiter from TECforLime, Carmeuse's new lime engineering company...

Introducing TECforLime

***Global Cement (GC):* Please could you introduce TECforLime?**

Danielle Knott, CEO (DK): TECforLime is a new technical engineering company, established in early 2018, that draws on Carmeuse's existing technical talent pool. It will support Carmeuse's operations around the world. It is 100% owned by Carmeuse. However, TECforLime will also seek to work with other lime producers and lime equipment manufacturers. At all times, TECforLime's focus will be on how we can help the end user of the lime products. This will include offering technical services to the many operators of captive lime plants, for example in the global steel industry.

At present most of our 20-plus engineers are based in Europe, but we will establish an Asian base during 2019. The company is currently trading on word-of-mouth outside of its activities for Carmeuse. After a period of testing the market, we have already generated several interesting project leads and have stategically selected several to carry forward. At the moment the external projects are a relatively small part of TECforLime's activities.

Below: Carmeuse's lime plant in Oman primarily supplies the Indian market.

***GC:* Why has Carmeuse formed a company that could potentially help its immediate competitors?**

DK: An obvious and important question - We asked ourselves this before establishing TECforLime. However, it is also the wrong question. The objective of TECforLime is not to sell Carmeuse's solutions directly to its competitors. It is to offer advice and technical assistance to operators, mainly of existing lime kilns, regardless of the original equipment manufacturer.

This is borne out of several years of discussions within the group. Should Carmeuse expand into different minerals? Should it focus on expanding its existing service offering? The company decided to choose the latter. This was because it already had a very experienced technical team that supported its global operations. Also, many steel producers, our biggest customer sector, actually operate their own captive lime plants. Such plants are not the core business of the companies that operate them and many need renovation and optimisation. This is where TECforLime comes in.

Focusing on these clients will open up new areas for the Carmeuse group. As lime quality affects steel quality and the cost of producing steel, we think that there will be great demand for assistance with captive plants. The value we can add to these businesses far exceeds simply offering lime products. The group will also benefit from expanding its operations into areas where there is no Carmeuse plant.

***GC:* What are the technical capabilities of TECforLime at present?**

Bernard Maiter, COO (BM): We can help with all aspects of lime production, which is in Carmeuse and TECforLime's DNA. We could look at a range of issues, including quarry optimisation, optimising the raw stone feed chemistry, optimising the kiln process and really helping companies to understand how the quality of the finished product affects their onward processes. We can also look at the configuration of equipment before and after the kiln, which is often neglected, especially in some of the older designs. Digitisation using our in-house software is also an exciting area, as is remote assistance. Remote assistance, mainly for cases that need immediate advice, is an area we want to really develop to differentiate ourselves from our competitors. Training of the captive plant staff is also an area that we want to develop.

***GC:* Does the establishment of TECforLime risk Carmeuse making enemies out of the traditional lime plant and equipment suppliers?**

DK: Some of them are not pleased about this, but TECforLime actually complements them. TECforLime will deliver equipment related to lime production, but its main market will be services and solutions.

At present, we are consulting with some particular customers that want equipment as part of the solution. TECforLime is not necessarily in the position to offer all equipment, so its role in this case is to help the customer understand the relative merits of the different solutions, always with an eye on the market and / or application the client wants to target.

To this day we see cases where a new entrant to the market establishes a lime plant and thinks that making and selling lime will be simple. They do not realise that everything starts with stone quality. If the stone quality is not there, they might not be able to sell into the markets they want to.

"Many captive lime plants need optimisation. This is where TECforLime comes in..."

Wider discussions

***GC:* What is the status of the lime sector in the regions that Carmeuse operates within?**

DK: The lime market is quite local. In Europe, the situation has been stable in terms of demand for the past 10 years or so, following a downturn in 2008 due to the global financial crisis.

In North America, the market has been quite strong and Carmeuse has been able to grow through acquistions. There was a downturn in demand from the US steel market in 2008 but the real downturn has been in the flue gas desulphurisation (FGD) market over the three five years. This is due to the low price of gas in the US, which is rapidly displacing coal and hence demand for lime for FGD processes. Thankfully the steel sector remains strong, especially on the Eastern Seaboard, where the majority of Carmeuse's lime plants are located. The construction market in the US also fueled the demand for lime over the past few years.

Asia is a developing market for Carmeuse. From our plant in Oman we supply to the Middle East and Asia, predominantly India. India was tough to enter due to a strong tendency towards captive lime plants, but Carmeuse's quality is regarded as the best in the region. The Indian steel market is the main

Left: Carmeuse workers at the Frasnes quarry in Belgium in 1958

Profile: Danielle Knott

Danielle Knott has worked for Carmeuse since 1999, starting in the legal department. She moved to human resources before being promoted to the Executive Committee in 2012 as the Chief Human Resources Officer. In 2018 she also became the Chief Executive Officer of TECforLime.

Profile: Bernard Maiter

Bernard Maiter has worked at Carmeuse since 1984, as a production engineer, plant manager and a group process expert. He was involved in extensive renovation projects in Central Europe in the 2000s to bring new acquisitions up to 'Carmeuse standard.' He became Chief Operating Officer of TECforLime in 2018.

Right: Overview of the Carmeuse Winchester plant in Virginia, United States.

consumer there. It is growing, not as rapidly as had been expected, but we are still sold out.

***GC:* Why not make the lime in India itself?**

DK: The quality of the limestone available in India is not as high as that of Oman, except in the north west of India. It is difficult to transport it from this region to elsewhere. It's far easier to produce lime elsewhere and export it to India. There's also a lot of administrative hoops to jump through for non-Indian companies that wish to set up limestone quarries, which makes running a plant there quite difficult.

***GC:* What about the rest of Asia?**

DK: Our first south east Asian plant, which started operating in 2017, is in Thailand. We are still developing that site and have different types of projects elsewhere in the region. China is not a major focus for Carmeuse as it has a lot of captive lime plants. It represents even more of a challenge than India.

***GC:* What is the lime supply/demand balance like around the world right now?**

DK: In some regions there is too much capacity, for example in Europe. The EU Emissions Trading Scheme (ETS) and other regulations in Europe may cause some plants to close in the medium term. There are a number of smaller players that receive subsidies under the current system that will lose them in the future. There are also locations around the world, for example in Africa, where there is not enough lime.

***GC:* Where's the next hot region for Carmeuse?**

DK: Africa, in addition to the Middle East and Asia, is a region that will develop greatly in the coming decades in terms of changing demographics. These regions represent opportunities for Carmeuse and the lime business in general. In some countries that have older plants, new technology will need to come in, so there will be demand for TECforLime's services too.

However, Africa is a bit like India, in that the limestone available is not generally of the best quality for lime production. There will be significant imports to African terminals in the coming years. That said, Carmeuse is already present in Ghana, Mauritania and Republic of Congo. We're also building a greenfield plant in Senegal. We're preparing for an expected increase in demand.

***GC:* Has there been much technological change in lime production equipment over the past decade?**

BM: Today the traditional lime plant suppliers are trying to develop new technologies, particularly with respect to kilns. There are different philosophies and technical approaches taken. At Carmeuse we have developed an in-house approach to focus on increasing efficiencies and reducing operational costs.

Often this relates to the use of more alternative fuels. In rotary kilns, this is relatively straight-forward. There are many lessons that can be applied from the global cement sector. However, alternative fuels are more of a challenge in vertical kilns. We have had to learn how to operate vertical kilns using alternative fuels. It is also important that, through all of this, we keep on improving the quality of the lime products that our kilns produce. As discussed earlier, offering higher quality is a powerful way into new markets.

***GC:* What are the main alternative fuels that can be used?**

BM: We are mainly focused on biomass-derived fuels, as these come with an advantage in terms of CO_2 emissions. We can also use waste-derived fuels, but this generally has to be limited to a certain percentage, especially for vertical kilns.

Our goal is always to be flexible. We want the kiln to be able to use different types of fuel, mixtures of fuels and, crucially, to be able to adapt to different fuels without a loss in performance. If a particular fuel increases in cost, for example, we have to be able to adapt, to reduce our outgoings.

DK: The focus on using biomass is part of our wider sustainability aims that also focus on a digital approach to kiln optimisation. How do we operate our kilns? How can we automate our kilns? How can we predict the response of our kilns to various inputs, changing stone quality, changing fuels, and so on.

Future trajectories

***GC:* There's a lot of discussion at the moment regarding the cost of emitting CO_2 within the EU ETS, which has been rising. If prices go much higher, say Euro50/t, will that be bad news for Carmeuse?**

DK: Operations within the EU will be impacted, of course, and Carmeuse have to adapt. If it impacts prices, the lime market will be reshaped and may have to face competition from outside the EU. However, Carmeuse has a strong asset footprint and has proved to be very innovative throughout the years to find solutions, so as to minimise the impact on our stakeholders.

***GC:* Earlier you mentioned that Carmeuse had been having discussions regarding other minerals. Is this option still 'on the table?'**

DK: At the moment this is not something we are pursuing. That said, we constantly review the situation. The world is changing fast, but I think lime will always be at the heart of what Carmeuse and TECforLime do.

***GC:* The European Commission has stated previously that it wants to decarbonise industry by 2050. If this vision is realised, is it possible for Carmeuse to survive in that environment, given that both its lime production process and downstream activities like steel would be affected?**

DK: You make a good point but we have actually been through this already in parts of Europe. Belgium for example lost part of its steel industry a long time ago but Carmeuse is still a major lime producer there. Aside from steel, lime is needed in agriculture, waste treatment processes, water treatment and flue gas desulphurisation, to name a few. I think that those markets are not going to disappear. In any case there is not a cost-effective alternative to lime for these applications.

BM: In terms of mitigating CO_2 emissions from the lime production process itself, I think the sector has to look at carbon capture and storage (CCS) if it is to remain viable in the EU by 2050.

Carmeuse is also already involved with several projects that look at alternative ways to produce lime. This involves separating the CO_2 from the process so that it can be reused in different industries. The problem at present is the cost to deal with the gas captured by doing this. Even at Euro50/t it might not be economical to capture CO_2. The technology still costs too much. Hopefully the great amount of research into this area will drive the cost down so that it becomes a commercially-viable technology.

***GC:* Thank you both very much for your time.**

DK/BM: You are very welcome indeed.

Left: Carmeuse's solar plant in Moha, Belgium. The group has a strong focus on sustainability.

Interview by Peter Edwards, Global Cement Magazine

In discussion: Charlie Zeynel, ZAG International

Global Cement recently spoke with Charlie Zeynel, of supplementary cementitious material (SCM) trading firm ZAG International, ahead of the *Global Slag Conference* in Aachen, Germany, to discuss current and future trends in granulated blast furnace slag (GBFS), fly ash and other SCMs.

Below: Is demand prompting steel makers to push their steel plants as hard as possible?

***GC:* How has demand for granulated blast furnace slag (GBFS) changed since we spoke a year ago?**

Charlie Zeynel (CZ): At the global level, demand for GBFS is still very strong, but I would say it has remained broadly unchanged over the past 12 months. Supply levels are also fairly similar, although demand continues to exceed supply quite significantly. Most regions have been pretty stable in terms of their use of GBFS and there have been no big surprises in the major economies and cement industries. However, we do see the overall demand for cementitious materials, including fly ash, increasing in some areas.

***GC:* Has that provided a more predictable market for suppliers and marketers like ZAG to work in?**

CZ: In a way, but in some regions every buyer appears to be scrambling for one reason or another. Supply constraints abound and therefore shipments are often delayed and there can be other logistical problems. The behavioural dynamics are also becoming more interesting. Looking back over the decade or so, the GBFS market was a clearly a buyers' market. There were fewer users than there are today and GBFS was not considered to be such a valuable (by)product. As the cement industry woke up to the benefits of using GBFS in their cement products for both performance and environmental benefits, the situation flipped to become more of a sellers' market over the past few years. The big steel companies have deliberately moved up the value chain to take a slice of the value of the final product: cement.

Many thought that the GBFS users had come to accept that, if you want GBFS, you're going to have to pay 'top dollar.' However, over the past 12 months we are beginning to see signs of a push-back from many of these users, both multinational and regional producers. They are turning round to the steel makers and saying, *'We cannot absorb any further price increases!'* They appear to be of the opinion that the steel producers have moved too far up the value chain. We see this in Europe and in Asia, where some of the major users are resisting some of the price increases. It's an interesting change in the dynamics of that relationship.

When prices go really high, this can lead to some unexpected outcomes. In the Middle East, where several governments had mandated that a certain percentage of GBFS or fly ash, usually a fairly high percentage, be used in cement and concrete products, this has created overcapacity in clinker production. The result is the price of the granular BFS now exceeds that of clinker

I wouldn't like to say that this is definitely happening, but we hear rumours that some Middle Eastern concrete producers may be adjusting their mix designs to comply with the new regulation in creative ways to minimise using the more expensive slag products. If true, that's really remarkable and certainly something that would have been unthinkable just a few years ago!

***CG:* Where is GBFS demand increasing the most at present?**

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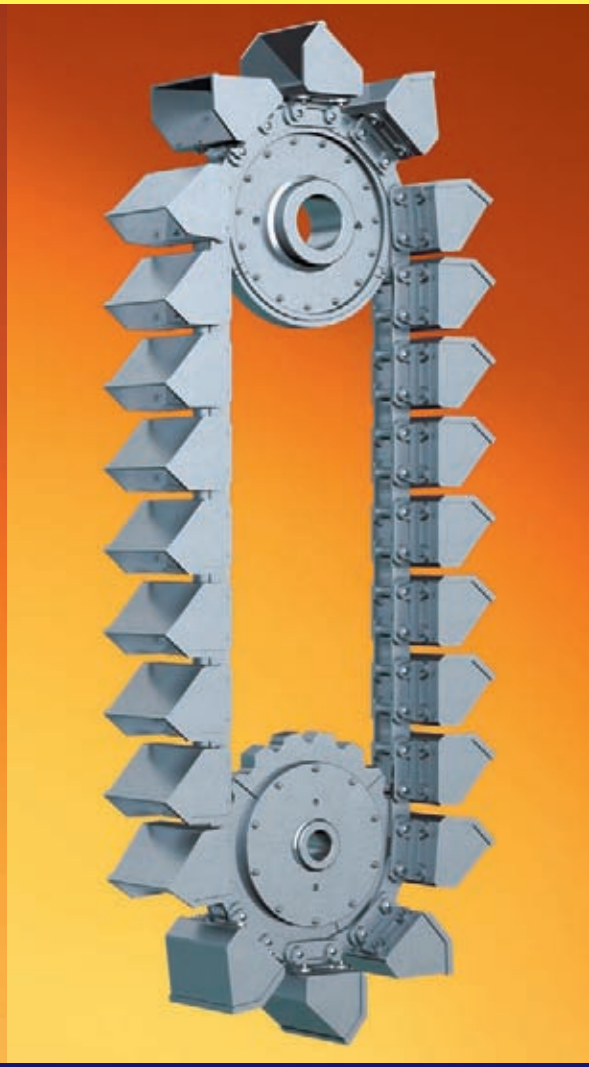

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CZ: Northern Europe seems to be picking up quite a bit, based on what we're hearing. The regions' major steel producer, ArcelorMittal, is essentially sold out for 2019. Interestingly, it finally bought out the Italian steel maker Riva in late 2018, following years of negotiations. Riva was a significant supplier of GBFS to outside the EU, primarily to the Mediterranean Basin, West Africa and the Americas for many years. Its Taranto plant, one of the largest steel mills in Europe, exported well over 1.3Mt/yr of material. Crucially, it did so at a more competitive price than the Arcelor products. Now that this plant is 'in the fold' so to speak, it will be interesting to see what this change in ownership will do to GBFS demand in the regions that the Taranto plant supplies during 2019.

Elsewhere, demand remains strong in China, which still has some of the highest GBFS prices in the world right now. Users there have been hit by a 'double-whammy.' Both clinker and steel plants are increasingly on campaign operations to reduce pollution, which has increased the scarcity of both cement and slag. As a result, there is very little GBFS coming out of China. When it does, the price is very high. Therefore, it is almost impossible to rely on Chinese GBFS for regular and consistent supply for the foreseeable future.

CG: **What about Japan?**

CZ: Japan has always been a strong GBFS market but, again, a lot of GBFS remains in the country. The two largest producers, Nippon Steel and JFE, are responsible for around 95% of GBFS exports from Japan. They are completely sold out at the moment, limiting their exports and steadily increasing their prices. This mirrors the pricing strategies seen elsewhere. They have also seen delays to production for various reasons. I estimate that around 1.0Mt of GBFS has been unexpectedly unavailable due to these issues over the past 12 months. It could be the case, in Japan and elsewhere, that demand is prompting steel makers to push their steel plants as hard as possible and in the case of older plants, unexpected mechanical issues and breakdowns will occur more frequently.

"We hear rumours that some Middle Eastern concrete producers may be adjusting their mix designs to comply with the new regulation in creative ways to minimise using the more expensive slag products."

GC: **What about the newer GBFS suppliers?**

CZ: Brazil is now a well-established exporter of GBFS out of two facilities, both of which are in the north of the country. I would estimate that, between them, those two plants will export substantial amounts of GBFS in the coming years.

Ukraine has and continues to try to break through as a GBFS exporter, but faces a few different issues. Firstly, many perceive the quality to be lower than other supplies on the market. Secondly, the country's infrastructure and port facilities have issues. Mariupol, the main export facility, can only load 25,000dwt ships, making it quite expensive to get GBFS out. There are also problems moving material around Ukraine in the winter months. Finally, and perhaps most problematically, the major steel plants are right in the middle of the conflict zone. We estimate that there's ~2Mt/yr of material that could be exported from Ukraine, provided progress can be made on these issues.

Last time out we also discussed Iran, which continues to be blocked from dealing directly with Western firms. That said, Iranian GBFS does reach places like the UAE, which, as already discussed, is happy to accommodate the product's perceived lower quality. Indian GBFS is also coming into the Middle East on this basis. Quite often Iranian / Indian GBFS

Left: The old town seafront of Taranto, with the town's massive steel plant in the background. Now owned by global steel giant ArcelorMittal, the plant is a massive supplier of GBFS to locations outside of the EU.

will be blended with more reliable supplies from elsewhere.

***GC:* Finally on GBFS: What's happening in the US?**

CZ: There remains a large stock of 'unused' slag in the US Mid West and, as far as we can see, it's not going anywhere. Much of it is held by the major players, who use it internally. On top of that, the major users of GBFS are on the coasts and will typically import it from abroad as it is cost prohibitive to move the Midwest slag to these markets.

***GC:* Let's move onto fly ash. How is the supply/demand balance?**

CZ: First let me head off a common misconception about the US market, one of the more interesting places for fly ash over the past 12 months. According to a recent Bloomberg article, more coal fired power plants were closed in 2018 than in any previous year and apparently more coal plants were closed in the first two years of the Trump Administration than the final five years of the Obama Administration.[1] That's not through a lack of effort on the part of Trump; it's just economics. The bottom line is that gas is cheaper than coal and energy firms are adjusting accordingly.

Recently, a mid-sized concrete producer in the US literally said, 'If you can find us 1Mt of fly ash, we will take it tomorrow!' I can tell you that, right now, fly ash is coming into some parts of the US Gulf from overseas for the first time ever as the result of this new demand.

***GC:* When that kind of call comes in, where do you first go looking for fly ash?**

CZ: There's limited supply of fly ash right now. Over the past five years, a regular amount has come in from Italy and Spain. Turkey is quite a force right now. It has built new coal power facilities in the past few years and the depreciation of the Lira means that its price is quite competitive.

Below: Cranes at Mariupol, Ukraine. The port could become a reliable GBFS export hub, if its logistical issues can be overcome.

A few people are looking at fly ash from other regions in Asia but the logistics are tricky. There are also a lot of Chinese coal plants that are offering fly ash for export. The prices being asked for are not very attractive for long-distance export markets. More importantly, the supply chain is still in development from China and reliable supply remains questionable for all the well known reasons. These include inconsistent quality, matching local specifications to international standards, logistical capability and others.

***GC:* With lower supplies of GBFS and fly ash, what alternatives are out there?**

CZ: In our previous discussions I mentioned volcanic pozzolans as a potential SCM of the future. This is gaining traction, but it's slow progress at the moment. This will be the answer for some users in some locations. The other big idea is recovery from ash ponds. There could be millions of tonnes of ash waiting to be cleaned up. This is yet to gain traction but there is significant interest in this area and some major players such as Boral and Charah are leading the way in the US. There are several new technologies being developed to clean, remove and dry these 'pond' ashes both in the US and in Europe. In the UK Coomtech apparently will have a demonstration unit to dry this pond-derived fly ash soon.

***GC:* What do you think will happen to the supply and demand trends for both GBFS and fly ash in the future?**

CZ: If we see business-as-usual, things will probably continue in a similar pattern as at present. There may be continued push-back from GBFS users on price or GBFS producers could retain their pricing power.

However, it is hard to predict what could happen in some major markets. There remains the political impasse in the US, with the longest ever government shutdown behind us and possibly others looming. Following strong growth, could the US also be on the brink of slowdown or recession? The trade tensions are also a big unknown, which are now clearly impacting many economies, not only China and the US. In Europe there's a big headache with the UK's increasingly messy departure from the European Union. All these are impacting industry confidence, so there is real concern that all of our growth projections could be at the mercy of geopolitical events.

***GC:* Charlie, thank you as always.**

CZ: A pleasure once again.

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World: Global steel production rises by 4.6% to 1.81Bnt in 2018

Global steel production rose by 4.6% year-on-year to 1.81Bnt in 2018 from 1.73Bnt in 2017. Data from the World Steel Association shows that production rose fastest in the Middle East, Africa and Australasia. Asian production rose by 5.6% to 1.27Bnt and North American production grew by 4.1% to 121Mt. European production remained static at 312Mt, with a slight dip in the European Union (EU) balanced by slight growth in the Commonwealth of Independent States (CIS). China remained the largest steel producing country, with 928Mt in 2018. It was followed by India, Japan, the US and South Korea.

Bangladesh: Shah inaugurates VRM capable of grinding slag cement

Shah Cement inaugurated the world's largest vertical roller mill (VRM), supplied by Denmark's FLSmidth, at its Muktarpur plant in Munshiganj in December 2018. The mill is designed to produce Ordinary Portland Cement (OPC), Pozzolana Portland Cement (PPC), Portland Slag Cement (PSC) and other slag cement. It produces PPC with 15% slag at a capacity of 500t/hr.

The FLSmidth OK 81-6 Mill has an 8.1m grinding table and six grinding rollers powered by two 5.8MW FLSmidth MAAG Max Drive gear systems. FLSmidth says that the mill is the largest VRM ever to be installed in a cement plant in terms of dimensions, operating capacity and installed power.

UK: Hanson completes Bellshill slag upgrade

Hanson has completed a Euro1.25m upgrade to its Bellshill cement and slag terminal in Glasgow, converting it into a dual product storage and distribution site. Improvements included new pipework and a new silo monitoring system. The site has three silos: two for cement powder, transported by rail from the company's Ribblesdale cement plant in Lancashire, and one for the storage and distribution of ground granulated blastfurnace slag (GGBS), produced at the company's Teesport site in Middlesbrough. The upgrade took 17 months to complete. Cement has been transported by rail to the Bellshill terminal since 2007.

Above: A train at the Bellshill cement and slag terminal in Glasgow, Scotland, UK.

Ireland: Ecocem promotes CO_2 savings of its slag cement

Ecocem says that its slag cement products have saved 10Mt of CO_2 emissions compared to regular cement since it started trading in 2002. It produces cement products from ground granulated blastfurnace slag (GGBS). It says its GGBS cement has a carbon footprint of 32kg of CO_2/t compared to 850-900kg CO_2/t for Ordinary Portland Cement (OPC). The Irish company operates four plants in Europe with a production capacity of 2.4Mt/yr.

Italy: Tapojärvi to supply slag handling services at steel mill

Finland's Tapojärvi has signed a contract to supply slag handling and metal recovery services at ThyssenKrupp's Acciai Speciali Terni steel mill. Tapojärvi Italia will build a slag-handling unit and then start to produce and develop slag-based products. The contract consists of a two-year period of building the unit and 10 years of operating time, with an additional option for another 10 years of operations.

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Olaf Michelswirth, Intercem Engineering

European regional modular cement grinding plants

In 2015, the idea was born by the industrial start-up Cem'In'Eu to create a new offering for cement materials that was both better adapted to the needs of local actors and closer to them. A modular cement grinding unit with smaller production capacities was intended to be built in strategic locations that offered good access by road, river and rail. For this purpose, reliable and experienced contract partners had to be found for the realisation of this ambitious project. The grinding unit for the first of seven identical regional grinding plants has now been realised by Cem'In'Eu in partnership with partners that include Intercem Engineering, which was to engineer, deliver and commission the plant's grinding plant module...

Cem'In'Eu is in the process of developing a new cement production and marketing concept, the first European network of regional modular grinding plants. It offers an innovative and flexible approach to the business, with strong breakthroughs in the supply, logistics, production and sale of cement products within Europe.

The company has launched seven identical projects in France and the rest of Europe, with a targeted market share of between 6% and 8% of local markets. The first project has now been realised and inaugurated in partnership with Intercem Engineering. The Aliénor Ciments grinding plant in Tonneins, Lot et Garonne, is located adjacent to the large cement markets of Toulouse and Bordeaux.

The Tonneins site is near to the railway line between Bordeaux and Toulouse, allowing the supply of clinker from Spain via the port of Bordeaux. The plant is intended to serve southwest France. The other six plants are as follows:

CimSaro: Located in the port of Chalon-sur-Saône, the plant will be directly connected to the rail network and the river Saône. Targeted markets are Auvergne, Rhône-Alpes, Burgundy, Franche-Comté and French-speaking Switzerland.

Rhône Ciments: Located in the port of Valence, the plant will be connected to the rail network and the river Rhône. Targeted markets are Rhône-Alpes, Auvergne and the Mediterranean Coast.

Ciments des Trois Frontières: Situated near the port of Mulhouse Ottmarsheim, the plant will use rail and the river Rhine. Its targeted markets are Alsace, Baden-Württemberg (Germany) and German-speaking Switzerland.

Val de Loire Ciments: The plant will be located in Western France, in Montreuil-Bellay, with its private rail access. Its targeted markets will be Western and Central France.

Pomorski Cement: Located at the Port of Gdynia near the bulk docks, the plant will supply northern Poland in the area surrounding Gdansk.

Thamesport Cement: Located in the deep-sea port of Thamesport, this plant will serve the customers of the dynamic region of Greater London and southeast England.

All of the modular grinding plants are designed with the same modules principle and are situated in the middle of their targeted markets. This approach reduces outbound logistics requirements to the minimum.

Below: Overview of the Aliénor Ciments plant in Tonneins.

Logistics and engineering

Each of the plants will comprise three modules: The raw material module (RMM); The grinding plant module (GPM), and; The cement silo module (CSM). Intercem Engineering was responsible for engineering, design, construction and commissioning of the GPM.

The plants are to be supplied with bulk raw materials (clinker, gypsum and limestone) using sustainable and environmentally-friendly logistics, a combination of sea-borne imports and then river and/or rail transportation from the seaport to the inland sites. All plants have direct rail access and/or are situated in or near river ports.

The modular grinding plants of Cem'In'Eu adapt themselves to many possible installations. They only need a small land area, around 2.5 hectares. They are modular and completely above ground, so that the necessary civil engineering is simplified. Thus they can be adapted to different topographic conditions. They are designed to ensure the highest possible cement qualities.

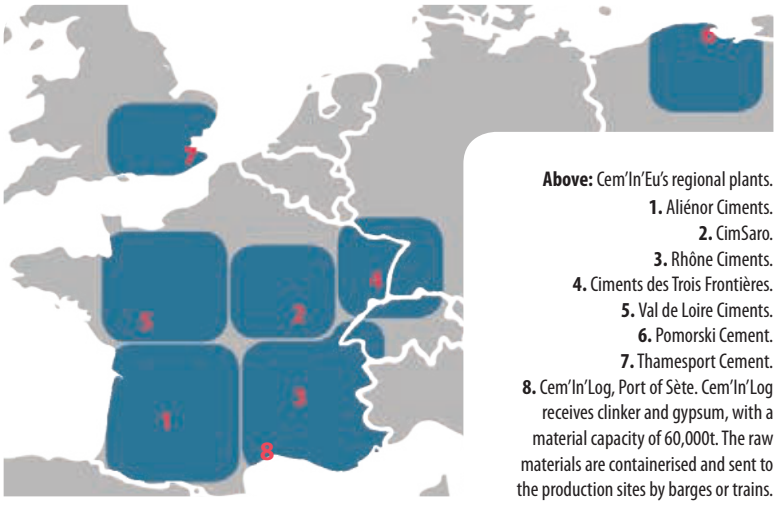
With regards to environmental protection and environmentally-friendly logistics, the plants are designed for areas where conventional cement plants would not be possible. The architectural approach of the modules allows for an innovative industrial aesthetic in harmony with the environment, whether semi-urban, rural or industrial. Thanks to the containerisation of the raw materials and to fully closed storage and production buildings, the plants integrate well within their locality.

Raw material feeding station

The modular grinding plants benefit from the latest available technologies in terms of safety and environmental protection against noise and dust. All the equipment used in the factories is manufactured in the EU.

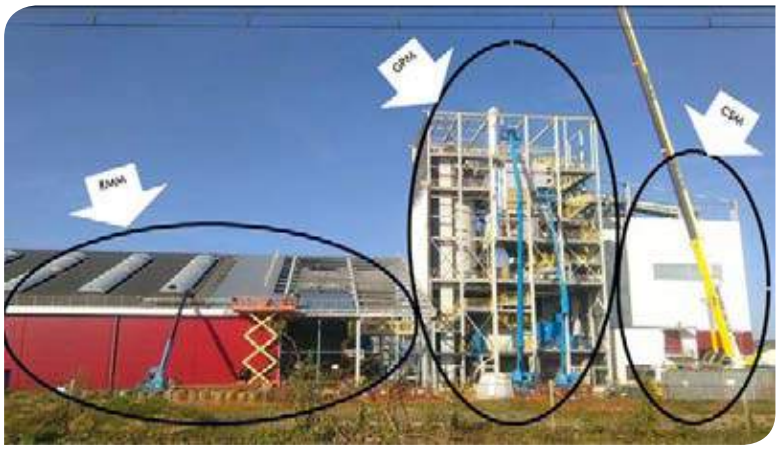
Production capacity

At full capacity, and depending on the product mix, the modular grinding plants produce around 0.25Mt/yr, which is about 8% of the local requirements. The targeted markets are independent readymix and



Above: Cem'In'Eu's regional plants.
1. Aliénor Ciments.
2. CimSaro.
3. Rhône Ciments.
4. Ciments des Trois Frontières.
5. Val de Loire Ciments.
6. Pomorski Cement.
7. Thamesport Cement.
8. Cem'In'Log, Port of Sète. Cem'In'Log receives clinker and gypsum, with a material capacity of 60,000t. The raw materials are containerised and sent to the production sites by barges or trains.

"The plants are designed for areas where conventional cement plants would not be possible..."



Above: The Cem'In'Eu regional grinding plant at Aliénor Ciments in Tonneins comprises three sections: Raw material module (RMM). Grinding plant module (GPM). Cement silo module (CSM).

Far left: The raw material module (RMM) at the Aliénor Ciments plant in Tonneins.

Left: Schematic of the grinding plant module (GPM) supplied by Intercem Engineering.

Right: Overview of the Intercem-built grinding plant module.

Aliénor Plant – Project milestones

Engineering order placed:	May 2016
Engineering phase:	May - Oct 2016
Main order placed:	Jul 2017
Laying of the foundation stone:	Oct 2017
Civil works:	Dec 2017 - Jan 2018
Start of erection:	Feb 2018
Start of commissioning:	May 2018
Start of production:	5 Jun 2018

Right: Intercem ball mill being installed during the construction works.

precast concrete manufacturers for bulk cement, and retailers and construction companies for cement in bags. These will be made of polyethylene, welded, 100% dense and re-sealable.

Intercem scope of supply

For the project at Aliénor Ciments, Intercem supplied a closed-circuit ball mill with vertical high-efficiency air separator. The mill type is a two compartment ball mill with a diameter of 3.2m and an effective grinding length of 10m. The first compartment is equipped with lifting liners to ensure powerful impact for coarse grinding. The second compartment is equipped with a three-step classifying liner system to ensure ball sorting, with ultra-fine grinding action. The intermediate diaphragm allows material flow adjustment to optimise the material levels in both compartments. The intermediate and outlet diaphragms ensure maximum air ventilation.

The plant is equipped with the latest generation IVS 62 vertical air separator to ensure high-efficiency particle separation. The installed mill power is 1300kW (side drive). The product is collected by direct separation by air jet filter (70,000m^3/hr) and the dust content within the clean gas is <15mg/m^3. The plant can produce three different types of cement: CEM II B-L 325; CEM II A-L 42.5; CEM I 52.5.

With the Aliénor Ciments projects, an extra technical challenge was the maximum allowable noise emission of 82dB/A around the building. This was realised with a special cladding, consisting of perforated substructure, mineral wool and trapezoidal external cladding. With these measures, Intercem achieved noise emissions of less than 82dBA.

Future plans

Work by Intercem Engineering is already well underway on the next two Cem'In'Eu grinding units, for CimSaro and Rhône Ciments, respectively. All of the plants have space that will allow the installation of a second grinding mill with the same capacity. This provides the opportunity to expand the regional grinding plants in future, should market conditions allow.

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Olha Lyeskakova, Mideco

Dust suppression for cement unloading applications

One of the major health hazards in the cement industry is occupational dust exposure. Dust can be released during each stage of cement manufacturing, from crushing and milling of the raw materials, through the preheater and kiln stage, to clinker grinding. Transporting and working with cement and concrete also has a potential to expose workers to dangerous levels of dust containing silica.

Cement dust exposure and inhalation is known to cause respiratory complications, especially if silica is present. Long-term exposure to silica can dramatically increase the risk of developing silicosis, chronic obstructive pulmonary disease, kidney disease and lung cancer.

The uncontrolled loading and discharge of dry bulk cargoes such as cement is particularly notorious for releasing large amounts of airborne dust. In addition to affecting workers' health, settled cement dust may delay processes and damage equipment. Furthermore, environmental pollution in the nearby residential areas can lead to litigation and, sometimes, the closure of facilities.

A wide range of techniques are used to manage and minimise cement dust during transportation and unloading. The grab cranes and simple belt conveyor technologies used by operators to transfer cement must be equipped with appropriate dust control devices. Unloading from cement tankers and ships requires the installation of dust collectors and use of personal protective equipment (PPE). Large dust collectors are also useful during cement unloading via pneumatic systems. The challenge here is to have dust suppression equipment that is not only highly efficient but cost effective and that can be easily implemented across a variety of cement unloading methods.

Right: View inside the top of the Burnley®Baffles system.

Unique dust suppression system

A unique dust suppression system for intake hoppers has been developed by Mideco, an Australian engineering company that specialises in dust control solutions for mines, quarries and any commercial environment where dust is a problem.

Its internationally-patented dust suppression system, Burnley® Baffles, is specifically designed to reduce the emission of dust from dump hoppers and chutes that handle dry granular bulk raw materials. When applied to a hopper alone, Burnley® Baffles are able to eliminate up to 80% of dust. With an additional dust collector applied directly to a hopper, '100%' of dust can be removed.

How it works

The Burnley® Baffles system consists of a set of modules that fill the open inlet face of a hopper. Each module contains a set of blades that pivot to allow the material flow into the hopper. The baffles strip the air moving into the hopper off the pieces of ore or grain because the air pressure on all sides of the baffles is all but constant. As the air is not heavy enough to open the blades, only the product enters the hopper, while the dust is kept below the blades. The design of the system is unique and uses the principles of air movement. This means that no complicated installation or maintenance is required.

Burnley® Baffles are utilised in ship unloading, rail unloading, truck unloading, bag tipping, drum tipping and front end unloaded material transfers. Its simple design makes

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Right: Equipment on-site prior to installation.

this system a perfect solution for any dust-related problems during cement unloading into hoppers. Burnley® Baffles have been already installed at cement facilities in Australia, the US, Canada, New Zealand and Uzbekistan.

Case-study: QUBE Ports, Western Australia

One example of Burnley® Baffles at work during cement unloading is Mideco's project for QUBE Ports Pty Ltd in Kwinana port, Western Australia. The client required a dust control system for a wharf hopper that dealt with cement and clinker. The unloading of the product resulted in considerable amount of dust, which caused delays and created a hazardous work environment for staff. In this particular situation, the dust suppression device was required for two large hoppers, each 5.8m in length and 6.8m wide. The hoppers were loaded via a 10m^3 clam shell grab, and the material bulk density quoted to us was specified as 3200kg/m^3.

After reviewing the data and consulting with the client, a solution using Model 2 Burnley® Baffles was recommended. In total 80 baffles, 40 for each hopper, were built and supplied to the client, together with two frames. The use of frames is fairly common, as they are installed for safety and to facilitate staff's access to the hopper surface area, if required.

The effectiveness of the dust suppression system was increased by mounting a dust collector on top of the hoppers. In this particular instance, to deal with the volume of the product and to accommodate the large size of the hoppers, an Economy Dust Collector consisting of 48 rectangular, envelope-style filter bags (1.04m long x 0.90m wide) was supplied.

Burnley® Baffles are easy to install, virtually maintenance free and can be customised to hoppers of any size. With five models available in various sizes to suit different types of dry granular bulk raw material, Mideco is able to address dust issues during handling of any product, be it cement, clinker, slag, coal or fly ash. Whichever dust suppression systems are used during cement unloading, it is important to ensure dust levels are kept to a minimum, so your staff and business are protected.

Below: Installation of Burnley® Baffles on one of the two hoppers at QUBE Ports' Kwinana port.

Below right: On-site checks ahead of the installation.

Interview by Peter Edwards, Global Cement Magazine

In discussion: John King Chains USA, Inc. Chains and sprockets for the cement industry

John King Chains is a major supplier of chains and sprockets to the global cement industry and a wide range of other sectors. In 2019 it is expanding its production base in line with its aim to become the world's largest privately-owned conveyor chain business.

***Global Cement (GC):* Please could you introduce John King Chains?**

Oliver Wadsworth, Sales Manager, North America (OW): John King Chains was established in Leeds, UK in 1926. Its original focus was on the manufacture of mechanical handling equipment to support the rapid mechanisation of coal mining in the UK. For nearly half a century, John King Chains built centrifugal discharge elevators, principally for cement plants, under license from a leading US-based corporation. From this long experience, the company developed a comparable range of mill duty elevator chains, introducing improvements in construction and specification over the years as appropriate.

***GC:* How has the company's range developed?**

OW: In the early days John King Chains' conveyor chain was generally of cast link construction. Cast chain remains an important part of the company's offering to the cement sector. Indeed, the company remains the global leader in the production of high alloy steel chains.

In 2019 John King Chains' conveyor chain programme is probably the widest of any manufacturer in the world, including for cast link, engineering class and forged fork link chains. The focus is always on being a 'solution provider' to its customers.

***GC:* Can you outline the company's footprint?**

OW: John King Chains is a global business with its headquarters and principal production site in the UK. It also has manufacturing and warehousing facilities in South Africa, South America, Eastern Europe and South East Asia.

Earlier in 2019, John King Chains USA Inc was established in Arkansas to further extend the company's global footprint. The first stage of this development is a welding and assembly plant. However, over time the plan is to develop the facility into a fully-integrated conveyor chain production plant.

John King Chains has an advantage since its size and structure allow a high degree of flexibility. It is thought that this will be valued by the US market, along with its wide range. The company will be able to apply lessons learned elsewhere in the world to the US market. For example, forged link chains are commonly used in Europe. As more European equipment enters the US market, John King Chains will be able to react positively to the 'new' technology and respond more rapidly than some of its competitors. Working with manufacturers' representatives, which seems to be the preferred route to market in the US, provides a 'fast track' to market and the company is confident that enquiry levels will be significant.

Above: Oliver Wadsworth joined John King Chains in 2009 after completing his degree in Business and Engineering in Oxford. After gaining an understanding of the company, he navigated towards sales, at first within Central and South America. In 2018 he moved to Charleston, South Carolina to head up the expansion of the business in the key US market. Oliver is a fifth-generation family employee of John King Chains, along with his brother William. He highlights that the opportunity to join the company was by no means certain. In fact, he says it was probably more challenging than for other recruits!

Left: A new ABB robotic welding arm at John King Chains' new plant in Arkansas.

Right: A pull test being performed on a JKD269 series cement chain.

John King Chains is proud to be investing in the USA and is confident that the special relationship between the UK and US will be realised as an increasing level of success for John King Chains in the US market.

***GC:* How important is the cement sector to John King Chains' activities in 2019?**

OW: The cement industry has been a key focus for the business since the early days of the company. Other key industries that the company supplies include timber processing, cane sugar production, the power sector and steel manufacturing. As of 2019, I would say that around 25% of orders are from the cement sector. Indeed, we plan to increase this level in the coming years through a larger focus on strategic markets, like the US.

The company's focus over the years has included the construction of mechanical handling equipment for clinker transport and replacement chains for all cement applications. The company seeks to share experiences between cement plants with similar problems to bring best practice to all of its clients.

***GC:* Where are the hottest markets for the company at the moment?**

OW: The 'top of the league' at the moment as far as cement clients go is South East Asia, notably Thailand and Indonesia. Malaysia and the Philippines will receive additional attention this year. Of course, I've already mentioned the planned expansion in the US, for 2019 and beyond.

***GC:* How do the needs of the cement sector differ from the others that John King Chains provides?**

OW: From a technical standpoint, the principal consideration in supplying to the cement sector is that it demands high and consistent quality. The cement industry is not so interested in optimum chain price but in lower cost of ownership. It also expects very high reliability and availability. John King Chains is pleased to have secured ISO9000 in 2015. Indeed, the British Standards Institute reported that its systems were first class.

***GC:* What trends do you observe in terms of the requests that cement producers make?**

OW: John King Chain has made major investments in the production of forged fork link chains as a response to cement clients' needs for robust and proven simple chains. These have proven their performance in many cement applications, including raw material transport, clinker transport, conveying alternative fuels and various dusts. The product was developed by the UK firm Redler. John King Chains is able to make its expertise available through ex-Redler technicians.

Right and opposite: CNC turning (right), milling and laser cutting (opposite) are the company's standards.

Left: Chain production still places significant demands on skilled labour.

***GC:* What are the most common requests from cement producers?**

OW: Requests and supplies vary on an ongoing basis. Very generally, manganese cast link drag chains and engineering class elevator chains are the two most requested and supplied chain series that cement producers ask for.

***GC:* What is John King Chains' manufacturing philosophy?**

OW: In the 1980s John King Chains employed nearly 400 people. Over the past 30-40 years, this has dropped to around 100. Despite this, turnover has more than doubled. This transformation has been possible by employing best techniques in machining operations including computer numeric control (CNC) turning and milling and bespoke machines for high production of pins, bushes and rollers.

Advanced fibre laser cutting technology for flat components and robotic welding have become the standard for the company. The development in the US has included the installation of an ABB robot welder and automatic CNC bending machinery.

***GC:* What level of involvement does John King Chains have in the installation / commissioning?**

OW: If required, John King Chains can offer the services of a partner business that specialises in on-site services like chain installation and commissioning. The company is confident in its partner's quality of workmanship, which has been proven again and again. A standard service that can be provided is the provision of personnel to attend site during critical installations to monitor and approve the quality of the workmanship being undertaken by plant staff or third-parties / contractors.

***GC:* Does John King Chains have any new products in the pipeline?**

OW: Not as such, as the business follows a process of continual product improvement with new chain designs and changes in specifications. For example, experience in the handling of a wide variety of fuels has allowed John King Chains to offer positive solutions to these challenges. The best materials with through-hardened and surface-hardened components has seen a dramatic reduction in down time and a significant advance in service life.

***GC:* What is the single largest opportunity for John King Chains over the 1-5 year timeframe?**

OW: The company's largest opportunity is its own attitude to doing business. It is the management's ambition to make the company the largest privately-owned conveyor chain business in the market. This will be realised via a programme of continual improvement in manufacturing techniques, as has been proven to be a successful route in the past. We are recruiting specialists in key industries to support the objective to sell our chains on their technical merits.

***GC:* Oliver Wadsworth, thank you for your time.**

OW: You are very welcome indeed.

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Chile: Bío Bío contract for Cemengal

Chile's Cementos Bío Bío plans to build a US$20m grinding plant at the Port of Matarani near Arequipa. The cement producer has all the necessary permits in place and it intends to open the unit in the first half of 2020, according to the Diario Financiero newspaper. Spain's Cemengal will supply a Plug & Grind mill for the project. The plant will have a production capacity of 0.2Mt/yr, although there are plans to double this if the market supports it.

Above: A Plug & Grind mill previously installed by Cemengal for Cementos Melón in Chile.

Kuwait: ACICO Cement orders mill from Cemengal

ACICO Cement has ordered a second cement grinding mill from Spain's Cemengal. The main equipment to be included in the contract includes a 5200 Kws ball mill with all the peripheral equipment from Cemengal and a fourth generation XP4i-130 classifier from Magotteaux for high strength cements. The projected grinding capacity will be 1Mt/yr of cement and the plant will be commissioned within the first half of 2020.

The project scope will include full engineering and complete supply of mechanical, process, electrical and automation equipment as well as the steel manufacturing from the raw materials handling areas up to the cement silos discharge. Site supervision, training and commissioning will also be provided by Cemengal.

Chile: Cemengal confirmed as supplier for Melón's Punta Arenas grinding plant

Spain's Cemengal has been confirmed as the supplier of a mill for Cementos Melón's grinding plant at Punta Arenas. The unit will use a Plug & Grind Xtreme modular grinding plant. The contract includes all the mechanical, electrical and automation equipment required for a 0.3Mt/yr modular ball mill and a classifier. Cemengal will deliver the mill by the end of 2019 to allow first cement and commissioning of the plant in the first quarter of 2020. The mill will be the most southerly in the world.

UK: Telestack to invest in Omagh plant

Northern Ireland's Telestack plans to invest Euro5.8m towards upgrading its Omagh plant. The mobile bulk material handling system producer will build a new 4180m^3 plant next to its existing site. The new unit will include production lines, a research and development centre and new office premises.

"Telestack has grown rapidly over the last number of years and we have firm plans to double our revenue again in the next three and a half years. We have out-grown our current facility and we need to extend our manufacturing footprint to meet the international demand for our products. We have made a conscious decision, even in the face of Brexit uncertainty, to invest locally," said Telestack's managing director Martin Dummigan.

Above: Telestack's plant in Omagh is set for a 4180m^3 expansion.

Germany: E-nizing launched by Schenck Process

E-nizing, a subsidiary of Schenck Process, has launched its E-nizing application. The software product offers to integrate all Internet of Things (IoT) machines collecting data from any machine, analytics or sensor. It is an open system, highly scalable and offers everything in one place, independently of its vendors. Non-IoT machines can also be retrofitted for the product.

The product also offers visualisation, analysis and action tools. Limits for every data point can be set and linked to triggers via telephone, email or application programming interface (API).

Vietnam: Bedeschi lime contract

Italy's Bedeschi has signed a contract to supply a double roller crushing unit and relevant control panels for the Quicklime Plant being built in Hoa Binh, Northern Vietnam. The unit is being built by a local cement producer. Start-up is scheduled by mid-2020.

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Italy/Germany: CIFA to exhibit world's first plug-in hybrid concrete mixer pump

Italy's CIFA will exhibit the world's first plug-in hybrid truck mixer pump, the Magnum MK28E, at Bauma 2019. CIFA says that the model has lower fuel consumption, makes less noise and is more environmentally-friendly, compared to traditional models, all in line with CIFA's normal high standards.

The MK28E has a 7m^3 drum and a 28m boom, with the last two sections made of carbon fibre. The hybrid technology used enables the truck mixer pump to be activated even when the truck's diesel engine is switched off. The phases of the drum rotation, the machine stabilisation, the opening/closing of the boom and the pumping of the concrete are now managed electrically.

China: Shanghai welcomes world's largest 3D printed concrete bridge

Chinese researchers from the Tsinghua University's School of Architecture have completed construction of the world's largest 3D-printed concrete bridge. At over 26m in length, the main structure was constructed from 44 3D-printed units of 0.9m x 1.5 x 1.5m. A further 68 sections were printed to provide a curved design that was modelled on the famous Zhaozhou Bridge, the oldest in China. Researchers reported that the construction cost around a third less than using traditional methods. Construction of the pedestrian bridge took just 18 days.

UK: New ready-mix plant for Jersey

SigmaRoc officially opened a brand new 80m^3/hr ready-mix concrete plant at is Ronez subsidiary in Jersey, Channel Islands on 13 February 2019. The position of the new facility, close to the entrace of the quarry in St John, will mean that customers no longer have to travel deep into the quarry to obtain their concrete. This will also ensure reduced delivery times.

US: CMC sells Transit Mix to Aggregate Industries

Continental Materials Corporation has announced the sale of substantially all the assets of Transit Mix Concrete, a leading supplier of building materials in Colorado, to Aggregate Industries, a subsidiary of LafargeHolcim, for approximately US$27m. The transaction includes the ready-mix plant operations in Colorado Springs and Pueblo, Colorado and the Daniels sand pit in Colorado Springs, Colorado. Continental Materials is retaining its building supply and aggregates businesses in Colorado, which will be rebranded as Castle Rebar and Supply, and Castle Concrete Aggregates, respectively.

Panama: Cemex plant wins CSC accreditation

Cemex's Panama Norte concrete plant has been awarded Responsible Sourcing Certification from the Concrete Sustainability Council (CSC). The building materials company says it is the first facility in the ready-mix concrete sector in Latin America to receive this designation. The plant met the CSC requirements via an audit by SGS, an independent certification body.

"We are proud of our Panama Norte plant for becoming the first concrete facility in Latin America to attain CSC certification, and we are committed to foster our leadership in the industry by delivering a superior customer experience and integrating sustainability into all aspects of our business," said Andres Jimenez, President of Cemex Panama.

UK: Colourful concrete

A team from the University of Dundee has come up with a new way to add colour to concrete, using wastes from toner ink cartridges. Lead researcher Dr Moray Newlands said, "Toner powder is incredibly fine, but cannot be recycled into new cartridges as it becomes contaminated and changes size once it is involved in the printing process. Around 10% of toner remains in a cartridge at the end of its life, so we've been looking at ways in which we can utilise it and prevent it being sent to landfill."

The team discovered that it was possible to mix cyan, yellow, magenta and black recovered toner powder to produce a range of colours within concrete with no effect on the integrity of the structures produced. Coloured products were shown to be resilient in both dry and wet environments and to UV radiation. Current coloured concretes are expensive and limited by a narrow palette.

Switzerland: LafargeHolcim mulls major divestments

LafargeHolcim is reported to be considering options, including divestments, for its businesses in the Middle East and Africa. Unnamed sources quoted by Bloomberg say that the company has held early talks with advisors about selling assets and it is also looking at an initial public offering (IPO). If it decides to sell its entire business in this region it may seek up to US$8bn. However, the sources thought that finding a buyer at this scale might prove difficult given market conditions. In 2018 the building materials producer operated 44 integrated and cement grinding plants in the region, 30 aggregates plants and 212 ready-mix concrete plants. LafargeHolcim did not comment on the report.

Above: LafargeHolcim has 44 cement plants in Africa and the Middle East, including Mbeya Cement in Tanzania. **Source:** Christel Ulomi, entrant to the *Global Cement Photography Competition*.

Spain: Upgrade for Sagunto

LafargeHolcim España will spend Euro4m on upgrades to its Sagunto cement plant, including work to automate the laboratory, add a new control system for the plant, make environmental changes, improve lighting and acoustics and remodel its white cement line.

Spain: Tudela Veguín buys lime producer

Cementos Tudela Veguín has purchased a full stake in Caleras de San Cucao, a lime producer based in Asturias, according to the La Nueva España newspaper. No value for the acquisition has been disclosed. The company operates a lime plant at Llanera and it runs two lime quarries at Agüera and Las Regueras. Cementos Tudela Veguín has a lime production capacity of 0.6Mt/yr from its Tudela Veguín plant in Oviedo.

Denmark: Cement sector activities dent overall picture at FLSmidth

An improving mining market has driven FLSmidth's sales, order intake and earnings in 2018. Its overall order intake grew by 13% year-on-year to Euro2.91bn in 2018 from Euro2.57bn in 2017. Its revenue increased by 4% to Euro2.51bn and its earnings before interest, taxation, depreciation and amortisation (EBITDA) rose by 5% to Euro212m.

"The high order intake in 2018 is due to an improving mining market, but it also reflects the performance of our organisation, our position and strong lifecycle solutions. This combination lays a good foundation for future growth," said group chief executive officer (CEO) Thomas Schulz.

However, the group's cement business order intake remained stable at Euro1.19bn. Sales revenue fell by 3% to Euro1.10bn and EBITDA dropped by 22% to Euro51m. It described the cement market as 'very competitive with stable pricing at a low level.' It did note a 'healthy level' of small to mid-sized orders related to grinding plants, upgrades, retrofits and single equipment. Replacement and upgrade projects are anticipated to show continued growth in 2019.

Greece: Titan Group's share exchange offer fails

Titan Group's share exchange offer between its subsidiaries has failed. It blamed this on a lack of ordinary shares being tendered, despite the support of Titan's core shareholders and its board of directors. The voluntary share offer was intended to help list its shares at exchanges in Brussels and Paris.

The group said that its strategy remained focused on international growth. It added that broadening sources of funding and improving access to international capital and credit markets was an important priority.

Above: Titan Cement plant situated in Drepano Achaias, Greece. **Source:** Paul Touliatos, entrant to the *Global Cement Photography Competition.*

Russia: Big upgrade plans for Kavkazcement

Eurocement is planning a second phase of upgrades for its Kavkazcement plant in 2019. These include starting to generate its own electricity, modernising its cement grinding mills, completing a maintenance campaign and moving to solely operating rotary kilns. The first phase of the upgrade project saw the plant build a slurry pipeline, construct the building for a captive power plant and purchasing monitoring equipment.

Ukraine: Cement production falls in 2018

Data from the State Statistics Service shows that Ukrainian cement production fell slightly, by 1% year-on-year, to 8.93Mt in 2018 from 9.3Mt in 2017. In December 2018 production fell by 19.9% year-on-year to 0.35Mt, according to the Ukrainian News Agency. The country has 15 companies that make cement with a combined production capacity of over 20Mt/yr.

UK: Aggregate Industries in liquid air energy storage system research

A consortium comprising Aggregate Industries, Innovatium and the University of Birmingham has gained funding from the Department for Business, Energy and Industrial Strategy (BEIS) to test a liquid air energy storage (LAES) energy-efficiency technology under the government's Industrial Energy Efficiency Accelerator (IEEA) programme. The IEEA programme, administered by the Carbon Trust on behalf of BEIS, will provide nearly Euro400,000 towards delivering a new compressed air system utilising LAES technology from initial laboratory testing to full operation at Aggregate Industries' Bardon Hill quarry in Leicestershire.

PRISMA (Peak Reduction by Integrated Storage and Management of Air) by Innovatium is a LAES technology that stores energy in liquid air form to provide compressed air, allowing inefficient partially-loaded, variable-demand compressors to be turned off, thus improving the total system efficiency by up to 57%. The PRISMA system will bring together a latent energy cold storage tank, filled with a phase change material (PCM) to store thermal energy, and a number of other off-the-shelf components to form a system that will work with Aggregate Industries' existing compressed air network. The research group says that the integration of the equipment and components in an industrial setting, for the provision of compressed air, has never been attempted before.

The 24-month project will involve the development of the PCM at the University of Birmingham's School of Chemical Engineering as well as the design, manufacture and assembly of multiple system components by Innovatium before installation of the system at Bardon Hill. The PRISMA Project has currently only been deployed in a simulated environment. Following successful delivery of the project, this scalable technology has multi-sectoral applications for compressed air systems around the world.

Sweden: Cementa to build pilot plant after electrification feasibility study

HeidelbergCement's subsidiary Cementa has completed a feasibility study into electrifying its cement plant at Slite in Gotland as part of its Cemzero project. A report from the first phase of the project has been submitted to the Swedish Energy Agency.

The study found that using electricity to supply heat during the clinker production process is possible using plasma technology, although this needs to be tested on a larger scale. Using an electrified process was found to be competitive compared to other options for achieving high reductions in CO_2 emissions. The production cost of cement would be doubled approximately but the research suggested that this might only mean a small percentage increase to the end cost of a building or an infrastructure project. Finally, the study reported that any future electrification of the Slite plant would work well with a planned expansion to wind turbine generation at the site. It would improve the energy balance and reduce the maximum power surplus that might occur.

Cementa and energy company Vattenfall will now look at how to build a pilot plant.

Germany: HeidelbergCement is best cement maker in sustainability list

HeidelbergCement has been awarded 'A-' in the climate change category of CDP's Climate A List. It also received the same score in the water security category. The result marked it as the highest-scoring cement company on the list beating other major international producers such as LafargeHolcim, Cemex and CRH. Notably, these other cement companies each received 'F' for water security due to a lack of sufficient information available. CDP analyses data from over 6800 large companies around the world.

"This is a strong confirmation that we are on the right track with our Sustainability Commitments 2030. The excellent result encourages us to further reduce our ecological footprint across all business lines and on a global level," said Bernd Scheifele, chairman of the managing board of HeidelbergCement.

HEIDELBERGCEMENT

Russia: Sales down for Iskitimcement

Iskitimcement's sales fell in 2018 due to a poor local market in Siberia and a drop in domestic exports to the Ural Federal District. Its cement sales fell by 2.2% year-on-year to 1Mt in 2018. Clinker production grew by 4.8% to 0.88Mt.

Lithuania: Akmenes' revenues rise

Akmenes Cementas' revenue rose by 18.9% year-on-year to Euro67.3m in 2018 from Euro56.6m in 2017. Its cement sales increased by 12% to 1.17Mt from 1.04Mt, according to the Baltic News Service. However, it continued to make a loss. The cement producer blamed this on mounting energy and staff costs.

Baltics: EvoQuip enters region

UK-based EvoQuip has appointed Stokker as the authorised EvoQuip Distributor to cover Estonia, Latvia and Lithuania for the full EvoQuip portfolio of compact crushing and screening equipment. EvoQuip is a brand owned by Terex Corporation.

Cyprus: Vassiliko wins environmental awards

Vassiliko Cement has won the Gold Environmental Protection Award in 2018 at the Pancyprian Environmental Awards for Organisations and Businesses. The prize was given for the cement producer's implementation of its Corporate Social Responsibility Policy. Company staff worked with local communities, non-government organisations (NGO) and others. The competition was organised by the Cyprus Center for Environmental Research and Education, in cooperation with the government and other groups.

UK: Lafarge Cement achieves ISO:50001 accreditation

Lafarge Cement, part of LafargeHolcim subsidiary Aggregate Industries, has achieved BS EN ISO50001:2018 in Energy Management Systems after demonstrating its on-going commitment to energy efficiency. The certification requires companies to show continuous improvement in reducing the energy intensity of their operations.

Italy: Buzzi sales rise by 2.4% in 2018

Buzzi Unicem's net sales rose by 2.4% year-on-year to Euro2.87bn in 2018 from Euro2.81bn in 2017. Its cement and clinker sales volumes increased by 4.3% to 27.9Mt from 26.8Mt. Ready-mix concrete sales fell by 3.6% to 11.8Mm^3 from 12.3Mm^3.

It attributed cement and clinker sales increases to acquisitions in Italy and Germany and to good market conditions in Czechia, Poland and Russia. However, poor weather hampered business in the US and a 'strong' decrease in business was reported in Ukraine. In Italy the cement producer benefited from its acquisition of Cementizillo.

Austria: Former RHI boss Franz Struzl dies

Franz Struzl, the former chief executive officer (CEO) of RHI, has died at the age of 76 years. He was the CEO of the refractory producer from 2011 to 2016.

Struzl studied at the Vienna University of Economics and Business in 1965. After more than 40 years at Alpine Steel Group (later Voestalpine), he became the chairman of Voestalpine in 2001. He held this position until 2004 and soon afterwards became CEO of Voestalpine Brazil (Villares Metals), remaining there until 2010. In 2011, he joined RHI as CEO. Struzl also participated in the first negotiations regarding the merger of RHI and Magnesita. He retired in 2016 due to illness.

Italy: W&P Cementi and Friulana Calcestruzzi grow

W&P Cementi and Friulana Calcestruzzi's turnover grew by 12% year-on-year to Euro35m in 2018. W&P Cementi produced around 0.35Mt of cement and binders. Friulana Calcestruzzi produced around 0.12Mm^3 of ready-mix concrete.

The companies are part of Austria's Alpacem brand, bringing together cement and concrete subsidiaries of Wietersdorfer Group in Austria, Slovenia and Italy. The group has a cement production capacity of 2Mt/yr and a concrete production capacity of 0.3Mm^3 across 19 sites with over 640 staff.

UK: Silo protection firm announces safety courses

UK level measurement and silo protection supplier Hycontrol has confirmed details of its new silo safety training courses, which have been audited and accredited by the Mineral Products Qualifications Council (MPQC). The courses cover all aspects of silo pressure safety during tanker deliveries and essential maintenance. Half and full-day courses will take place in the UK during the rest of 2019.

Professor Ben Anthony and Dr Peter Clough, Cranfield University, UK

CCS can fight back with the cement sector

CO_2 capture and storage (CCS) have become 'dirty words' in some quarters of the energy sustainability debate. The costs have appeared too great and the rewards too temporary. Since 2017, six major projects have been shelved in the UK alone. However, none of the criticism or lack of political will regarding funding has changed the fact that we need *more* CCS research and facilities, sooner rather than later...

Above: Professor Ben Anthony, Cranfield University.

Below: Dr Peter Clough, Cranfield University.

It's a fantasy that major global economies can avoid CO_2 emissions in the near term. That's because, while decommissioning coal-fired power stations has made an instant impact on CO_2 emissions, future reductions in emissions will be much more difficult to achieve... without CO_2 capture and storage (CCS). Effective CCS will be critical for the forthcoming 'interim period' before humankind solves the issues of energy storage and reaches a renewable-only phase. CCS is the most cost-effective way the world will be able to meet COP21 commitments and avoid the hazardous, if not catastrophic CO_2 levels of 450ppm or more.

Thankfully, new technologies are increasingly making CCS much more commercially viable. As an example, decades of drilling under the North Sea has left vast amounts of space for CO_2 storage, enough to last the UK for at least 100 years. There's potentially enough capacity to accommodate emissions from other parts of Europe too. What matters now is a focus on approaches that can help to fill up spaces like this, and, crucially, that can be brought to market over the period to 2030. Only this will start to change the hard emissions figures. Blue-sky thinking is of no use if it will take 20-30 years to deliver results.

The CCS technologies that could be used in the cement sector depend on a number of factors, including a given plant's size and location. However, it is clear that amine scrubbing, which separates CO_2 from flue gas and has now been validated at the commercial scale within coal-fired power stations, could be used effectively within the industry. The costs for this technology are in the range of Euro90–100/t of avoided CO_2 emissions, which is admittedly high.

Calcium looping is the continuous temperature cycling of a calcium-based CO_2 sorbent between two reactors, a calciner and carbonator. CO_2 is released at the calciner and absorbed at the carbonator. Like all CCS technologies, one of the major issues for calcium looping is cost and the likely energy penalty imposed by the technology. However, seven different studies estimated costs of US$16-38/t of avoided CO_2 emissions. In the absence of full-scale demonstration units, calcium looping technology is very cost-competitive compared to amine scrubbing and could offer CCS at a much lower energy penalty.

More recently, research by teams at Cranfield University and Imperial College London has demonstrated that commercial-grade cement can be manufactured from the calcium looping process at the pilot level. This research used near industrial-scale conditions with limestone that was treated with hydrogen bromide as the sorbent in the calcium looping process. Using this material, the first demonstration of 100% O_2 firing in the calciner was performed. These results have been backed up by tests with 80% oxygen firing in the calciner of a 1.7MWh pilot plant. This result suggests that a reduction in capital costs of about 21.7% might be possible and the process could offer 14.3% and 27.4% reductions in the electricity costs and CO_2 emissions, respectively.

There remains a clear need to demonstrate this technology at a larger scale and, with it, the real potential for a future of a decarbonised cement industry. To this end, the Cranfield team has been working, with Calix, the firm spearheading the Low Emissions Intensity Lime and Cement (LEILAC) pilot plant facility hosted by the HeidelbergCement Lixhe plant in Belgium. The LEILAC project, which has been covered extensively in previous issues of *Global Cement Magazine,* will divert some of the plant's raw feed and calcine it, while keeping the process CO_2 emissions separate from the fuel used. This stream will be suitable for CCS.

Right now, we need more proof and momentum to reach the 'tipping point' as quickly as possible for CCS. Ideally what's needed is a realistic framework for industry to work with. This could, literally, make a world of difference.

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US: PCA backs Trump's infrastructure call as Sullivan points to lower growth

The Portland Cement Association (PCA) has praised President Donald Trump's call to rebuild the country's infrastructure in his State of the Union address. Trump said that he wanted both political parties to work together to pass an Infrastructure Bill.

PCA president and chief executive officer (CEO) Michael Ireland said, "The Portland Cement Association applauds President Trump for emphasising the political imperative of addressing America's long-neglected infrastructure needs in his State of the Union address. America's cement manufacturers are ready and willing to work with Congress and the Trump Administration to find a legislative solution that shores up our transportation and waterways in a fiscally responsible manner."

The PCA's comments come after Ed Sullivan, the PCA's Senior Vice President and Chief Economist, forecast that cement consumption would grow 'moderately' in 2019 alongside similar performance in the general US economy. However, he flagged gradual increases in interest rates, the aging recovery and accompanied trade issues as possible factors slowing down the cement market. Sullivan made his comments at the World of Concrete event in Las Vegas, where he revealed some of the details from his forthcoming spring forecast.

"The US economy's long run of growth should continue in 2019," said Sullivan. "Since 2011 we have averaged 2 million jobs being created each year and the unemployment rate is below 4%. Despite the headlines, the impact in the near term of the rising interest rates and inflation are relatively benign. Simply put, fundamentals like these take a long time to unwind."

President Trump signed an executive order making it the policy of the US Federal Government to buy local goods, including cement, for infrastructure projects, in an effort to boost demand for home-grown construction materials. The directive aims to strengthen the 'Buy American and Hire American' executive order issued in 2017 by giving a preference for raw materials manufactured in the US for use in government-backed projects.

Peru: Consumption could rise by 6.5% in 2019

Research from Scotiabank forecasts that Peruvian cement consumption will grow by 6.5% in 2019 due to construction sector growth. The market will be supported by both private and public investment, according to the Gestión newspaper. Private investment will be supported by the mining industry. Infrastructure projects, including Line 2 of the Lima Metro, the expansion of the Jorge Chávez Airport, the Port of San Martín, the Port of Salaverry and others, are expected to support public investment. Local consumption of cement grew by 3.7% year-on-year in 2018, the highest rate of growth since 2013.

Mexico: Cemex hampered by earnings outside of North America

Cemex's operating earnings before interest, taxation, depreciation and amortisation (EBTIDA) rose by 1% year-on-year on a like-for-like basis to US$2.56bn in 2018 from US$2.57bn in 2017. It has attributed this decrease in real terms to lower earnings from its territories outside of Mexico and the US. Its net sales rose by 5% to US$14.4bn from US$13.6bn.

"We are pleased with our 6% top-line growth during 2018, supported by higher consolidated volumes and prices in our three core products. Operating EBITDA grew by 1% on a like-to-like basis in this period," said Fernando A Gonzalez, the chief executive officer (CEO) of Cemex. He added that the company had reduced its total debt to nearly US$1bn in 2018. By region, Cemex's sales and earnings rose in Mexico and the US, fell in the rest of the Americas and were mixed in Europe. In the Asia, Middle East and Africa sales increased due to growth in the Philippines, but earnings fell.

US: Eagle revenue rises in nine months to December 2018

Eagle Materials' revenue rose slightly to US$1.11bn in the nine months to 31 December 2018. Revenue from its Heavy Materials business, including cement, fell slightly to US$564m. Overall cement sales volumes remained stable at 4.41Mt. Operating earnings decreased by 10% to US$153m from US$170m.

"Adjusting for the effects of unusual weather trends during 2018 and a shift in the timing of wallboard price increases and related buying activity, we estimate that the overall market demand for our building materials, notably cement and wallboard, remained in positive territory in 2018, with growth rates in the low single digits," said chief executive officer (CEO) Dave Powers. He added that in the quarter from October to December 2018 margins had been negatively affected by higher costs due to maintenance outages at two plants and upgrades to emission control equipment.

Colombia: OPC production grows slightly

Ordinary Portland Cement production grew by 1.2% year-on-year to 12.5Mt in 2018 from 12.3Mt in 2017. Data from DANE, the Colombian statistics authority, shows that deliveries to the local market increased slightly, by 0.2%, to 12Mt. Production grew faster in December 2018 on a year-on-year basis, with 6.8% growth.

Canada: Lafarge Canada Exshaw plant receives government low-carbon funding

The Alberta Climate Leadership Plan has allocated US$7.5m for the Lower Carbon Fuels Project at Lafarge Canada's Exshaw cement plant. The funding is part of a total of over US$50m that will be distributed to 11 projects in the Province. Projects were selected and funded through Emissions Reduction Alberta (ERA), an organisation that accelerates the development and demonstration of emissions-reducing technologies.

Below: Looking north east over the LafargeHolcim Exshaw plant in Alberta, Canada.

"This multi-partner, multi-site research project will help Lafarge Canada better understand the environmental benefits of introducing lower-carbon fuels at the Exshaw Cement Plant," said Kate Strachan, plant manager at Exshaw. "The Exshaw low-carbon fuels project will go a long way in helping us reach our ambitious corporate goal to produce 40% less net CO_2/t of cement by 2030. This support from ERA helps us move this project forward. We hope that any positive results or lessons learned will encourage others in our industry to do the same, giving this investment a greater, far-reaching impact."

The project at Exshaw involves studying co-processing alternative fuels to replace the use of natural gas. Technologies for fuel handling, processing and injection will be installed at the site to replace 50% of its natural gas use. The implementation at Exshaw will be supported by development of a waste and fuel processing facility in Calgary. Eight fuel types will be examined, including construction renovation and demolition waste, non-recyclable plastic, carpet and textiles, shingles, treated wood products, wood products, rubber and tyre fluff.

Canada: U-turn on McInnis stake

The Caisse de dépôt et placement du Québec (CDPQ) announced on 6 February 2019 that it no longer wanted to sell its majority stake in McInnis Cement. In an apparent about-turn, its CEO said that the pension and insurance fund was 'convinced' of the potential of the company, according to the Journal de Quebec. The company hired consultants in 2018 to look at a potential sale.

Source: UNACEM website.

Peru: Strong 2018 for Unacem

Unacem's sales rose by 5.7% year-on-year to US$586m in 2018 from US$555m in 2017. Its cement sales despatches grew by 1.3% to 5.06Mt from 4.99Mt. Its operating profit fell by 13% to US$184m from US$211m. It blamed the fall in profit on reduced dividends from a subsidiary in Ecuador and other businesses. During the year the cement producer made upgrades to its Atocongo Thermal Plant and to the dedusting systems for the coolers on kilns 2 and 3 at its Condorcocha cement plant.

Chile: Electric shock for Polpaico

Cementos Polpaico has blamed a loss of US$3.2m in 2018 on changing an electricity supply contract. Changing the contract to move to a new supplier, Colbún, led to a negative financial impact of around US$12.5m. Its sales rose by 23% year-on-year to US$249m in 2018 from US$202m in 2017. Its sales volumes of cement grew by 10% to 1.35Mt from 1.23Mt. Despite the overall loss its earnings before interest taxation, depreciation and amortisation (EBITDA) increased by 51% to US$18.7m from US$12.4m.

Paraguay: Local media presses INC over Turkish petcoke deal

Local press is querying why state-owned cement company Industria Nacional del Cemento (INC) has signed a US$5.6m petcoke contract with Turkey's Sanfil-GT consortium for a total of 24,000t. A delivery of 12,000t of petcoke has since been delayed for 'logistical reasons,' according to the ABC newspaper.

In 2018 INC awarded a tender to buy US$6m of Turkish-produced clinker from Sanfil-GT Scientific. However, the manufacturer, Cemco Cement Trading, later warned that neither Sanfil SA nor GT Scientific SA were authorised to market the commodity.

GLOBAL CEMENT NEWS: *THE AMERICAS*

US: Terex to invest in North America

Terex says that its Terex Washing Systems (TWS) brand is investing in its North American sales and operational teams. Following the spend it will have 20 regional partners via 50 service depots, 60 mobile trucks and 100 technicians in the region.

"Our new enhanced levels of sales and service and support will build upon momentum gained in recent years as we continue to focus on serving customers, with world-class washing equipment solutions that add commercial value to their operations," said TWS' director Oliver Donnelly.

TWS manufactures products for the mineral washing sector for aggregate, recycling, mining and industrial sand industries.

Dominican Republic: New local Cemex head

Cemex has appointed José Antonio Cabrera as the president of Cemex Dominicana. He succeeds Alejandro Ramírez, who has been named president of Cemex Colombia. Cemex Dominicana has operations in the Dominican Republic, Haiti and Puerto Rico (US).

Bolivia: New markets for Fancesa

Fábrica Nacional de Cemento (Fancesa) plans to target markets in La Paz and Cochabamba. It will open agencies in the locations in the first quarter of 2019. The cement producer operates a plant at Sucre in the south of the country.

Uzbekistan: Railway firm to build 1Mt/yr plant

Representatives of France's Freyssinet, a civil engineering company, have met with Uzbekistan Railways to discuss building a new 1Mt/yr cement plant in the Pakhtachi district of Samarkand. The unit will be used to provide cement and related products to the railway company. The construction of new infrastructure projects - including railway lines, subway lines and bridges – was also talked about at the meeting.

Uzbekistan: Eurocement to commission new line at Akhangarancement by 2021

Russia's Eurocement plans to commission a new 3Mt/yr production line at the Akhangarancement in Tashkent region by 2021. Company president Mikhail Skorokhod discussed the project with representatives of the Chamber of Accounts of Uzbekistan, according to Uzbekistan Daily. US$160m is being spent on the new line and US$40m will be invested towards other improvements at the site. Work on the upgrade stated in October 2018. China's CNBM is the main contractor on the project.

Uzbekistan: Huaxin plant for Zafarobod

China's Huaxin Cement plans to build a new 1.2Mt/yr cement plant in the Zafarobod district of Jizzakh region for US$150m. The unit will be commissioned in December 2019, according to the Trend News Agency. It intends to export about 0.12Mt of cement during the first stage of production. As part of the project, Huaxin Cement's local subsidiary, Huaxin Cement Jizzakh, has been temporarily exempted from paying various tariffs, including income, property, custom and added taxes.

India: JK Cement's income falls by 27%

JK Cement's income has fallen due to growing raw material, power, fuel and freight costs. Its income fell by 27% year-on-year to US$24.5m in the nine months to 31 December 2018 from US$34.2m in the same period of 2017. Its expenses rose by 2.5% to US$456m from US$445m. Its revenue increased by 1.4% to US$481m from US$474m. Additional costs also arose during the reporting period from an US$18,000 fine levied by the Competition Commission of India in August 2018. The cement producer is challenging the penalty.

Pakistan: Lucky takes a dive

Lucky Cement's earnings before interest, taxation, depreciation and amortisation (EBITDA) fell by 16.5% year-on-year to US$51.3m in the six months to 31 December 2018 from US$63.7m in the same period of 2017. The cement producer said that its cost of sales rose by 14.2% due to mounting packaging, coal and other fuel prices. Its revenue grew by 6.2% to US$250m from US$235m. It attributed this to higher export volumes of cement and clinker. Its local sales of cement and clinker fell by 8.4% to 2.99Mt from 3.27Mt. Exports more than doubled to 1.02Mt from 0.5Mt. Accordingly, overall sales volumes increased by 6.8% to 4.01Mt from 3.76Mt.

India: JSW to upgrade Salboni plant

JSW Cement plans to increase the production capacity to 3.6Mt/yr at its Salboni grinding plant in West Bengal. The unit has a capacity of 2.4Mt/yr at present, according to the Economic Times newspaper. The cement producer plans to strengthen its presence in eastern India, starting with West Bengal, Bihar, Odisha and Jharkhand. The plant manufactures Portland Slag Cement and it hopes to tap into local demand for this product with the upgrade.

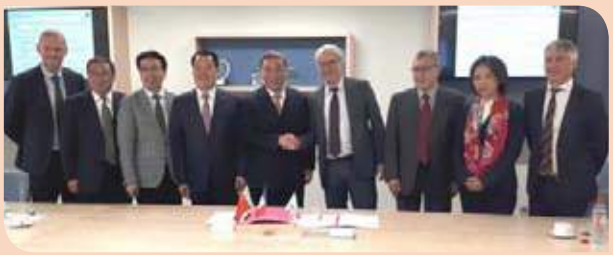
Pakistan: Powering on at Nooriabad

Power Cement has provided an update on construction work towards building a third line at its Nooriabad plant. 97% of the equipment ordered from Denmark's FLSmidth has been received. 22% of erection work has been completed. The design phase of a new 40MW grid station and its fixing has been completed and civil work has commenced. Overall civil work is reported to be 91% complete.

The cement producer ordered the new 7700t/day line from FLSmidth in 2017. China's TEPC has been handling the construction and erection contract. China's CECC Tianjin (Pakistan) Electric Power Construction has been in charge of civil construction.

China: CNBM and Fives announced cooperation agreement

China's CNBM and France's Fives have signed a cooperation framework agreement for future collaboration. The cement plant equipment manufacturers will explore projects together in plant upgrade, plant expansion and new plants to implement Fives technologies, such as the FCB Horomill grinding system, the FCB Pyro-line and Pillard burners on an international basis. The signing ceremony of the agreement took place in late January 2019, bringing together Song Zhi Ping, the chairman of CNBM and Frédéric Sanchez, the president of Fives.



Below: The signing of the agreement took place in January 2019.

Nepal: Cement self-sufficiency

Dhrubaraj Thapa, the chairman of the Nepal Cement Producers' Association, says that the country has become self sufficient in cement production. Local producers are expected to start exporting cement in the next financial year. The country made 9Mt of cement in the 2017-2018 financial year from a production capacity of 13Mt/yr.

Philippines: Cemex gets Solid tax break

Cemex Philippines has received a set of tax breaks and financial incentives for the new 1.5Mt/yr production line it is planning to build at its Solid Cement plant in Antipolo, Rizal. Its subsidiary Solid Cement has obtained 'pioneer' status from the Board of Investment (BOI) but with 'non-pioneer' incentives, according to the Inquirer newspaper. This means that the project may be able to benefit from a longer income-tax holiday. The new production line is scheduled to be operational by early 2020.

India: Former Binani owner must stay in India

Braj Binani, the owner of Binani Industries and the former owner of Binani Cement, has been prevented from travelling to the UK by Indian immigration officials. Punjab National Bank (PNB) issued a so-called lookout notice to prevent debt defaulters leaving the country, according to DNA Money. The notice was issued following Binani's failure to attend a Kolkata Bench of the National Company Law Tribunal (NCLT) on 20 January 2019.

Binani Industries had stood guarantor for a US$42m loan taken out by a subsidiary but then left unpaid. Binani Cement was acquired by UltraTech Cement in late 2018 following a legal battle with Dalmia Bharat.

South East Asia: LafargeHolcim on divestment path

LafargeHolcim has closed the divestment of Holcim Indonesia. It has sold its 80.6% share of the subsidiary to Semen Indonesia for US$1.75bn. The deal was first announced in November 2018. The company said that the proceeds from the sale would 'significantly' improve its net debt to recurring earnings before interest, taxation, depreciation and amortisation (EBITDA) ratio by 0.2, with the target of two times or less to be achieved by the end of 2019. LafargeHolcim has been targeting divestments as part of its Strategy 2022 initiative.

Meanwhile, LafargeHolcim is reportedly considering selling its subsidiary Holcim Philippines. Sources quoted by Bloomberg said that the multinational building materials producer was trying to find the 'right' price for the business. Holcim Philippines has been valued at around US$2.5bn. It operates integrated cement plants at La Union, Bulacan, Misamis Oriental and Davao.

India: South Central Railway to boost cement carrying capacity

The South Central Railway (SCR) hopes to increase its cement loading capacity to 27.5Mt/yr in the current financial year. It has handled 20.5Mt in the nine months to the end of December 2018, according to the Hindu newspaper. The cement industry represents the second largest freight segment for the Indian railway sector with a 23% share of a capacity of 500Mt/yr for the 2017-2018 year.

Papua New Guinea: Integrated plant on the cards after feasibility study

Australia's Mayur Resources has completed a feasibility report looking into building an integrated cement plant near Port Moresby, the capital of Papua New Guinea. The cement and lime plant project has an estimated cost of US$331m. It will produce 1.65Mt/yr of clinker, be able to grind 0.9Mt/yr of cement and produce 0.2Mt/yr of quicklime. The study also found that the project area had reserves of 78Mt of limestone and 14Mt of maiden mineral resource that could support the project for 30 years.

The company is now arranging compensation agreements with the local community and submitting a mining lease application. Award of engineering, procurement and construction (EPC) design and engineering contracts, finalise product offtake and project financing arrangements are scheduled for the second half of 2019.

India: UltraTech profit hit by energy costs

UltraTech Cement's income rose by 17% year-on-year to US$3.73bn in the nine months to the end of 2018 from US$3.18bn in the same period of 2017. Its net profit fell by 21% to US$197m from US$250m. The main causes for this were rising power, energy and logistics costs. Despite this, income and net profit rose in the third quarter of the year. The cement producer also completed its acquisition of Binani Cement in the third quarter.

Philippines: Opposition to San Miguel

Church and non-government organisations (NGO) have filed a document with the local government expressing their opposition to several San Miguel projects, including a new 2Mt/yr cement plant at Pagbilao in Quezon. They allege that no public hearing was given for local communities to comment on the projects among other complaints, according to the Business Mirror newspaper. San Miguel is planning to build a group of projects at the site in Ibabang Polo, including a coal power plant, a logistics hub and a quarry.

Turkmenistan: Plant starts making sulphate-resistant cement

A cement plant in Balkan province has started producing sulphate-resistant cement. A first batch of 7000t of the product has been manufactured, according to the Trend News Agency and local media. The Institute of Chemistry of the Academy of Sciences of Turkmenistan worked on the project with specialists from the Ministry of Industry and Turkmengeologiya State Corporation.

Thailand: SCG revenue rises by 4%

SCG's revenue from its cement business rose by 4% year-on-year to US$5.82bn in 2018 from US$5.60bn in 2017. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) fell slightly, by 1%, to US$676m from US$711m. The group attributed its cement sales growth to operational expansion in all markets. It reported that local demand for cement increased by 3% in 2018 due to growth in the government sector. Overall, the group's revenue rose by 6% to US$15.2bn but its EBITDA fell by 15% to US$2.76bn.

New Zealand: Hotdisk order for Fletcher Building

Fletcher Building has ordered a Hotdisk Combustion device from Denmark's FLSmidth for installation at its Golden Bay Cement plant in Portland. Once the Hotdisk is operational the plant's kiln will consume up to 3.1 million shredded tyres per year. Carsten Damslund Jensen, Global Product Line Manager at FLSmidth, said that the company is forecasting the sale of 10 Hotdisk units in 2019. Demand around the world, and especially in China, is driving the growth.

India: Three die at ACC's Sindri plant

Three contract labourers have died at the ACC Sindri cement plant in Jharkhand. The labourers were working on a conveyor belt when it unexpectedly started running, according to the Pioneer newspaper. Other workers were also injured in the incident. A police investigation is underway.

global cement DIRECTORY 2019

The unique listing of all cement plants

The *Global Cement Directory* is a unique annual publication - *in print and digital editions* - that lists all integrated cement plants and grinding plants in the world. The fully revised 2019 edition lists 2348 integrated and 640 ginding plants over 260 pages.

Above: Sample pages from 2019 edition.

The *Global Cement Directory* contains...

- The most complete listing of integrated and grinding cement plants available worldwide;
- The number of kilns at each plant and whether it uses wet, dry or other production processes;
- Up-to-date plant capacity information;
- Newly-updated telephone and fax numbers for plants (where available);
- News of planned upgrades, with completion/commissioning dates (where known);
- Maps showing plant locations;
- Country reports for key countries and regions;
- Full analysis of integrated capacities by country and region.
- Updated list of national and regional cement industry associations.
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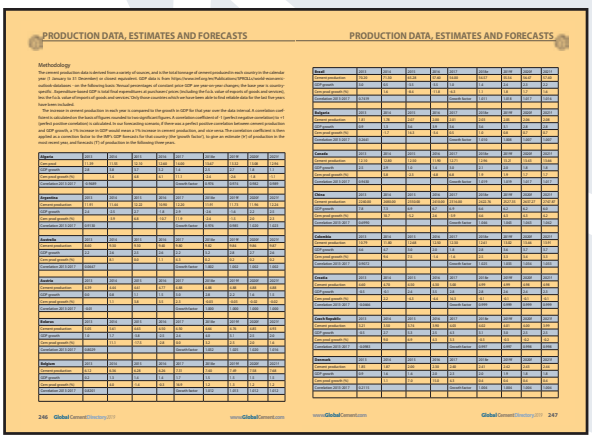
NEW FOR 2019: National cement production and forecasts to 2021 for 57 countries



The *Global Cement Directory 2019* is available to order in PRINT (£350) or PDF (£350) format, or as a PDF & PRINT BUNDLE (£430).

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Tanzania: Construction of incredible 7Mt/yr, US$1bn plant to start soon

The Tanzania Investment Centre (TIC) says construction of a new 7Mt/yr cement plant by China's Sinoma and Hengya Cement is due to start soon. TIC executive director Geoffrey Mwambe said that the government body had provided all the necessary incentives for the US$1bn project. The TIC licence gives investors a three-year window in which to start construction. Otherwise, the licence will be revoked.

The Chinese company plans to build a cement plant with a 120MW captive power plant. At least 70% of the cement produced at the plant will be exported and the remainder will be sold domestically. The unit is expected to create 4000 - 8000 direct and indirect jobs.

Ghana: Ghacem targets 3Mt in 2019

Morten Gade, the managing director of Ghacem, says that the company plans to make 3Mt of cement in 2019. It also has a target of producing and distributing 60 million bags in 2019 compared to 56 million bags in 2018. The HeidelbergCement subsidiary operates two grinding plants in the country.

South Africa: PPC volumes fall in fourth quarter

PPC's sales volume of cement fell by 2-3% year-on-year in South Africa in the nine months to December 2018. The cement producer said that, although prices had risen, the market had shrunk by up to 5%. Imports grew by 80% year-on-year for the January to November 2018 period. Outside of South Africa, the company said that growth had been low in Zimbabwe and the DRC due to local market conditions. Better performance was noted in Rwanda and Ethiopia.

Ivory Coast: New plant announced

A new cement plant is being planned for construction near Gagnoa. Mayor Issouf Diabaté made the announcement to the city council, according to the Agence Ivoirienne de Presse. Sales tests on cement from the company building the plant are being conducted in the local market. The preferred location for the plant is in Galbré sub-prefecture between Soubré and Gagnoa.

The Gambia: Importers argue tariff inequality

Cement importers have asked the government to treat all importers equally after Alhajie Cessay, a local importer, said that some government-preferred companies that import cement from Senegal were exempt from the tax. They complained that other importers have been subject to tariffs since the start of 2019.

Above: The Oman Cement Company factory near Muscat, Oman.

Rwanda: Hima Cement considering new plant

Uganda's Hima Cement is considering building a new cement plant in Rwanda. It has been conducting discussions with local agencies about the project, according to KT Press. The cement producer currently operates offices in Rwanda at Nyacyonga in Gasabo district. It also runs a warehouse and a ready-mix concrete batching plant.

Oman: Raysut to upgrade clinker cooler

Raysut Cement has signed an agreement with Ayoki Engineering for an upgrade to its clinker cooler line three at its Salalah plant. The local engineering, procurement and construction (EPC) contractor will source the equipment from Germany's IKN, according to the Muscat Daily newspaper.

The existing grate cooler at the unit will be replaced by a 4000t/day IKN Pendulum clinker cooler with a guaranteed capacity of 3500t/day clinker production. The project scope includes related civil works, supply and installation works of mechanical and electrical works. Sourcing and installation of the refractory will also be under the responsibility of Ayoki Engineering through IKN. Final installation of the project is planned for the fourth quarter of 2019.

Ethiopia: 5000t/day plant announced for Dejen

Abay Industrial Development has ordered a new 5000t/day cement plant worth Euro100m from Denmark's FLSmidth. The plant will be built near Dejen. FLSmidth has received a down payment for the project but it will not be added to its order intake until further conditions have been met.

The order includes design and engineering, full equipment supply, automation systems, installation and commissioning as well as training and extended supervision. Completion of the order is expected during the second quarter of 2022.

South Africa: Cartel hearings restart

The Competition Tribunal has resumed hearings into allegations of cartel-like behaviour by Natal Portland Cement (NPC), Pretoria Portland Cement Company (PPC), Lafarge Industries South Africa (Lafarge) and AfriSam Consortium (AfriSam). It follows a referral by the Competition Commission following an investigation in 2015 that examined collusive conduct between the cement companies between 2008 and 2012. At the time PPC was granted conditional leniency and AfriSam and Lafarge settled with the Commission.

Iraq: Attock completes Basra plant

Pakistan's Attock Cement has completed civil, mechanical and electrical construction work on its grinding plant at Basra. The unit is now ready for commissioning. The company is currently obtaining permission to import clinker. Once granted, the company will start importing clinker and commence trial production at the plant. The producer first announced its intention to build the plant in 2013.

Iraq: MAN starts Samawa gen-sets

Germany's MAN Energy has commissioned six MAN 18V32/40 generator sets for Kairat Al Abar Iraqi's new cement plant in Samawa. The engines will supply 54MW of electrical energy for the plant. No value for the order has been disclosed.

Kenya: WHR unit for Devki project

Devki Group has ordered a waste heat recovery (WHR) unit from China's Sinoma Energy for its Athi River plant as part of a US$250m package. The deal also includes supplying a power plant for the company's steel plant in Kilifi, according to the Daily Nation newspaper. Both projects will be completed by late 2020.

Uganda: Land allocated for new plant

The local government has allocated more than 228 hectares of land for the construction of a new cement plant. The land was offered to the Uganda Development Cooperation (UDC) and its partners TSAVO Engineers and Savanna Mines in November 2018, according to the Ugandan Independent newspaper. However, the local community has expressed concerns about the project.

Zimbabwe: Appointment at Lafarge

Lafarge Zimbabwe has appointed Siame Kaulule as its chief executive officer (CEO). Kaulule succeeds Amal Naiel, who has spent five years in the post. Kaulule, a Zambian citizen, joins the company from LafargeHolcim in the UK where he was general manager for retail and has previously served as executive in other European and African markets for the company, according to the Business Report newspaper. He has previously worked as the regional marketing director for the southern Africa cluster, including Zimbabwe, Zambia and Malawi.

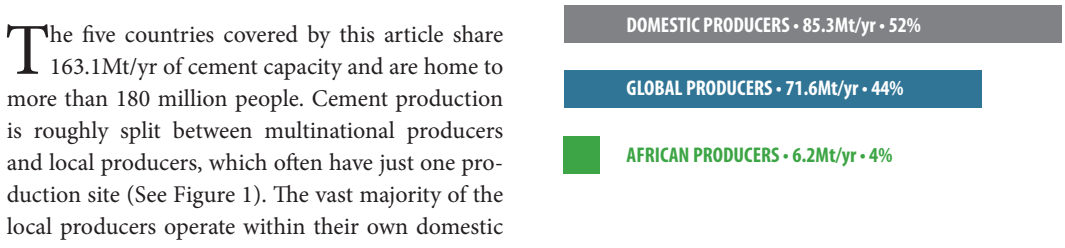
Peter Edwards, Global Cement Magazine

Cement in North Africa

This article looks at the cement sectors of five North African nations: Algeria, Egypt, Libya, Morocco and Tunisia.

The five countries covered by this article share 163.1Mt/yr of cement capacity and are home to more than 180 million people. Cement production is roughly split between multinational producers and local producers, which often have just one production site (See Figure 1). The vast majority of the local producers operate within their own domestic markets, although two of these operate in more than one African market.

Table 1 and Figure 2 rank the five countries by installed cement capacity. By far the largest is Egypt, which holds around 75Mt/yr (48% of the region's capacity). The smallest is Libya, with just 7.7Mt/yr (5%). The region's top five companies by installed capacity are shown in Table 2. The majority of the largest players are from outside Africa. The exception is El Arish Cement, which operates a single plant. The 13Mt/yr facility, one of the largest in Africa, opened in 2018.



Right - Figure 1: North African cement capacity by type of producer. **Source:** *Global Cement Directory 2019.*

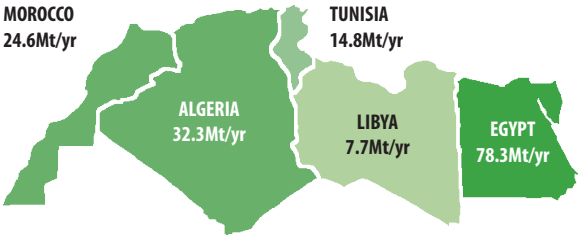
Country	Integrated (Mt/yr)	Grinding (Mt/yr)	Total (Mt/yr)
Egypt	74.6	3.7	78.3
Algeria	32.3	0.0	32.3
Morocco	24.6	5.4	30.0
Tunisia	14.8	0.0	14.8
Libya	7.7	0.0	7.7
TOTAL	154.0	9.1	163.1

Right - Table 1: North African countries, ranked according to installed cement capacity in 2019. **Source:** *Global Cement Directory 2019.*

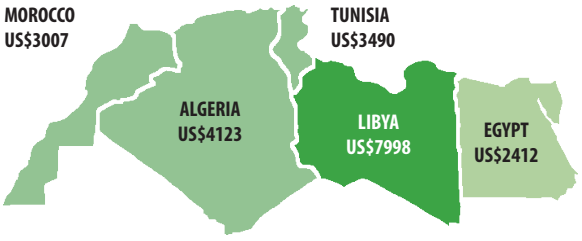
Right - Figure 2: Egypt is the dominant force in the North African cement sector. **Source:** *Global Cement Directory 2019.*

Rank	Parent Company	Capacity (Mt/yr)	Headquarters
1	LafargeHolcim	28.3	Switzerland
2	HeidelbergCement	17.5	Germany
3	El-Arish Cement	13.0	Egypt
4	Cemex	5.7	Mexico
5	InterCement	5.5	Brazil

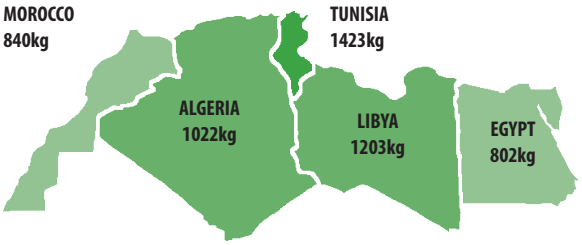
Below: View of Rabat, the ancient capital of Morocco.



Above - Figure 3: Cement capacity of North African countries. **Source:** *Global Cement Directory 2019.*



Above - Figure 4: GDP/capita (US$) of North African countries. **Source:** World Bank Data Indicators.



Above - Figure 5: Capacity/Population of North African countries. Calculated from Figure 3 and World Bank Data Indicators.

Figures 3-5 show the relative cement capacities, GDP/capita and cement capacity / population for each country. While capacities and GDP/capita values are quite varied, there is less variation in capacity/population data. The high values, around 800-1400kg/capita, indicate that each country is capable of rapid construction, although in reality production is often hampered by political and economic instability.

Algeria

The People's Democratic Republic of Algeria has a wide range of cultural influences stemming from periods of Roman, Ottoman and European rule. Most recently, the country gained independence from France in 1954 following a protracted armed struggle after the Second World War. Bordering the Mediterranean Basin to the north, Morocco to the west, Mauritania and Mali to the south west, Niger to the south east, Libya to the east and Tunisia to the north east, Algeria is the largest country in Africa.

Cement sector - Producers

Algeria currently has 20 integrated cement plants that share 32.3Mt/yr of capacity. There are no cement grinding plants. The largest producer is LafargeHolcim. It operates 9.7Mt/yr of capacity from two plants and also has stakes in ERCC (35% of 1.2Mt/yr) and CILAS (51% of 2.7Mt/yr). In total, this gives LafargeHolcim control of around 11.5Mt/yr of cement capacity, around 36% of national capacity. The second largest producer is Société des Ciments de Aïn et Kebira (SCAEK), which has a single 3.9Mt/yr plant. ASEC is the third-largest. It runs a 3.0Mt/yr plant via its subsidiary Zahana Cement. These and the other cement plants in Algeria are shown in Table 3.

Above: The Port of Oran. Cement exports will be increasingly important for Algeria in the coming years.

In addition to the above, Sonatrach is reported to be building a 1.0Mt/yr integrated plant in Relizane, although it is unclear whether or not the project is under construction. South Africa's PPC is also involved in a protracted build at Honda (2.2Mt/yr) and China Triumph International Engineering is adding a further 1.4Mt/yr to its facility at Adrar.

More recently, it was announced that Zahana Cement is set to expand via the addition of a new 1.6Mt/yr. Commissioning is expected in early 2020. China's CBMI has signed a contract with ASEC Cement to build a 4500t/day clinker production line at ASEC's Djelfa plant. The unit was originally partially built by ASEC Egypt in 2008 and had completed 90% of civil work before it was suspended due to the financial crash. Local company ETRHB Haddad and the Algerian subsidiary of China State Construction Engineering Corporation (CSCEC) took control of ASEC Cement in 2017, allowing the Djelfa project to continue. Completion is expected by the end of 2019.

Below - Table 3: Algerian cement producers, ranked by installed capacity.
Source: *Global Cement Directory 2019.*

LH = LafargeHolcim.

Rank	Company	Capacity (Mt/yr)
1	LafargeHolcim	9.7
2	SKAEK	3.9
3	ASEC	3.0
4	ERCE	2.9
5	CILAS	2.7
6	ECDE	2.0
7	Buzzi Unicem	1.8
8	SCIBS (51% LH)	1.6
9	CTIEC	1.5
10	ERCC (35% LH)	1.2
11	Biskrie	1.0
12	ERCO	0.5
13	Tebessa	0.5

Cement sector - Recent trends

The byword in the Algerian cement sector in 2018 was 'exports,' due to rising capacity in the country. In March 2018, Lafarge Algeria, LafargeHolcim's local subsidiary, reported that it had taken a profit hit due to overcapacity in the country, which had steadily grown worse since the middle of 2017. It reported that the country would face a surplus capacity of 20Mt/yr by 2020. Lafarge Algeria, which made its first exports to West Africa in December 2017, stated that it would export 30% of its output, around 5Mt/yr of cement, by 2020 in an effort to offset growing capacity.

Over the past 12 months, other Algerian cement plants have made announcements regarding their exports. GICA made exports to Europe in 2018, in a reversal of the previous trend. The Aoulef plant began exporting cement overland to Niger in March 2018. CILAS, 35% owned by LafargeHolcim, began exporting clinker from the port of Annaba to West Africa in 2018. In February 2019, Youcef Yousfi, the Minister of Industry and Mines, said that Algeria would aim for cement exports worth US$500m by 2023, based on a surplus capacity of 10-15Mt/yr at that time.

Another response to the falling profitability of the Algerian cement sector in 2018 was ASEC's announcement in September 2018 that it was seeking to sell its 35% stake in Zahana Cement. To date it has not found a suitor.

Cement sector - Recent news and contracts

In November 2018 Zahana Cement ordered an RL 850/1500 double roller crusher from Italy's Bedeschi. The contract is on an engineering, procurement and construction (EPC) basis and it includes the supply of the new machine, designed for 500t/hr of marl, the removal of the existing machine and the installation of the new crusher with the revamping of the existing electrical board. Commissioning is expected by mid-2019.

In January 2019, Germany's Aumund received two clinker conveying equipment orders, for cement plants at Zahana and Bechar. The two orders comprise 26 belt and chain bucket elevators, two bucket apron conveyors, 10 pan conveyors and 10 drag chain conveyors. No value for the deals has been disclosed.

The Aïn Touta Cement, part of GICA, has spent US$10m on a new filter. The investment is part of a group of improvements intended to increase production at the unit in 2019.

Egypt

The 1952 Egyptian Revolution ended centuries of Roman, Ottoman and British rule. One of the most populous African nations (~99 million in 2019), Egypt saw relative stability under the restrictive 30-year dictatorship of Hosni Mubarak. His rule lasted from 1981 to the 'Arab Spring' protests of 2011, when popular protests led to his resignation.

Since 2011 Egypt has remained unstable. Mubarak's successor Mohamed Morsi was ousted in a similar fashion, before the incumbent Abdel Fatteh el-Sisi was sworn-in in 2014. El-Sisi secured re-election in 2018, albeit against nominal opposition. The grievances that led to the popular uprising in 2011, including diminished oil revenues, high unemployment and limited political freedoms, remain.

Cement sector - Introduction

Egypt has the largest cement sector of any of the five countries in North Africa. There are 23 integrated cement plants that share a capacity of 74.6Mt/yr, plus three grinding plants that share a further 3.7Mt/yr.

This 78.3Mt/yr capacity is a far cry from the situation 100 years ago, when the first cement plants were established under British rule. The formation of the National Company for Cement in 1956 consolidated the capacity of three plants that shared just 0.3Mt/yr of capacity. Egypt expanded its cement sector with new plants in the 1970s and 1980s before the Mubarak regime privatised it in the 1990s, leading to an influx of multinational firms, now including Cemex, HeidelbergCement, InterCement, Titan Group and LafargeHolcim. They hold 30.1Mt/yr (38%) of Egypt's cement capacity. The remainder of capacity is controlled by locally-held firms, including those owned by Egypt's military.

Cement sector - Producers

The story of Egypt's largest cement producers is partly a tale of the country's largest plants. The largest producer is El-Arish Cement's which has a single plant in Beni Suef. Opened in April 2018, the plant has a capacity of 13Mt/yr across six identical dry process lines. This plant represents around 17% of national capacity.

The second-largest producer is HeidelbergCement, which operates five integrated plants through its subsidiaries Suez Cement (2 plants, 5.4Mt/yr), Helwan Cement (2 plants, 5.5Mt/yr) and Tourah Portland Cement (1 plant, 1.0Mt/yr). Its 11.9Mt/yr capacity provides it with 15% of national capacity.

The third-largest producer is LafargeHolcim, which, like El-Arish Cement, only operates one plant. However, the plant has a capacity of 10.6Mt/yr, sufficient to provide it with 14% of Egyptian capacity. Egypt's other cement plants are shown in Figure 6.

In September 2018 Helwan Cement agreed to sell its white cement plant in Minya Governorate to Emmar Industries. The transaction is planned to take place following the de-merger of the white cement unit from the rest of the company. The subsidiary of HeidelbergCement and Suez Cement said that the sale was part of its plan to restructure the business and improve its financial position. The company previously said it had received bids for the white cement plant in June 2018.

Cement sector - Recent news and contracts

Egypt's cement sector has been battered by several logistical and economic issues in recent years, in addition to prolonged political uncertainty. Demand took a hit after the Arab Spring and domestic consumption remains far below capacity. This has lowered the price producers can realise in the market.

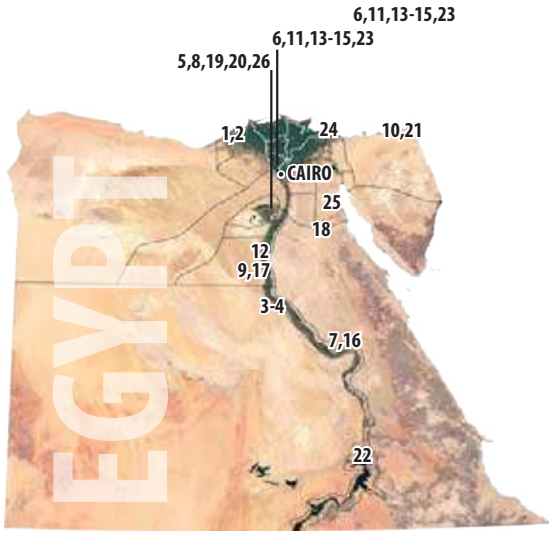
At the same time fuel shortages, which began in 2013 due to a reduction in government fuel subsidies to heavy industries, have eaten into producer margins from the other direction. The price of mazut, a form of heavy fuel oil, increased by a factor of 2.5 over the six months from January to June 2013. Over the past five years this has prompted a wide-spread switch to coal imports and alternative fuels. While less costly than mazut, Egyptian cement producers are now paying significantly more for fuels than before this change in government policy. Then, just as a 'new normal' had been established, the government increased energy prices in June 2018, piling further pressure on margins. Cement exports, the refuge of several producers, are now also becoming uncompetitive, as the region's long-standing importers switch to exporting *their* cement overcapacity. Algeria is a prime example, along with several markets in East and West Africa.

In September 2018, Medhat Istvanos, head of the cement division of the Chamber of Building Materials, said that 'the government's bureaucracy has eliminated export hopes,' according to the Daily

Right: Egyptian cement producers have had their margins squeezed from several directions in recent years.

Below - Figure 6: Locations of Egyptian cement plants.
Source: *Global Cement Directory 2019*.

LH = LafargeHolcim.
HC = HeidelbergCement.



I = Integrated. **G** = Grinding. **W** = White cement.

1. Alexandria Portland Cement (Titan), 2.0Mt/yr - **I**.
2. Amreyah Cement (InterCement), Alexandria, 5.5Mt/yr - **I**.
3. BMIC, Assiut, 1.5Mt/yr - **I**.
4. Assiut Cement (Cemex), 5.7Mt/yr - **I**.
5. Beni Suef Cement (Titan) 3.2Mt/yr - **I**.
6. Lafarge Cement Egypt (LH, 10.6Mt/yr - **I**.
7. Misr Qena Cement (27% ASEC), 1.4Mt/yr - **I**.
8. El-Arish Cement, 13Mt/yr - **I**.
9. Helwan Cement (HC), 1.9Mt/yr - **I**.
10. Sinai Cement (41% Vicat), 1.9Mt/yr - **I**.
11. Suez Cement (HC), 3.0Mt/yr - **I**.
12. Suez Cement (HC), 2.4Mt/yr - **I**.
13. Helwan Cement (HC), 3.6Mt/yr - **I**.
14. Tourah Portland Cement (HC), 1.0Mt/yr - **I**.
15. Royal El Minya Cement, 0.2Mt/yr - **W/I**.
16. Nahda Cement Company, 1.7Mt/yr - **I**.
17. Misr Cement Qena, 2.0Mt/yr - **I**.
18. Arabian Cement, 5.0Mt/yr - **I**.
19. Wadi El Nile Cement, 2.0Mt/yr - **I**.
20. Misr Beni Suef Cement, 3.5Mt/yr - **I**.
21. Sinai White Cement (57% Cementir), 1.2Mt/yr - **W/I**.
22. Medcom Cement, 0.8Mt/yr - **I**.
23. South Valley Cement, 1.5Mt/yr - **I**.
24. SPEGYCO, 0.6Mt/yr - **G**.
25. El Sewedy Cement, 1.5Mt/yr - **G**.
26. South Valley Cement, 1.6Mt/yr - **G**.

News Egypt newspaper. He added that the Egyptian cement sector had a capacity utilisation rate of 60%, with consumption of around ~54Mt/yr expected for 2018. He also said that the decision to build the new 13Mt/yr Beni Suef cement plant was 'not based on precise information' and that it had further 'harmed local production.'

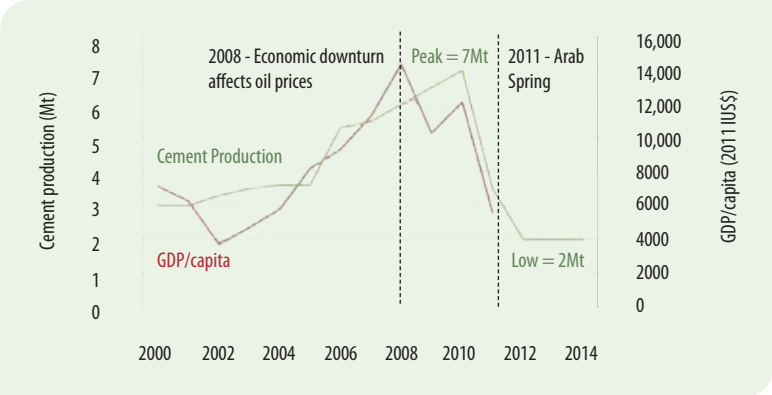
Right: Libyan Cement Company's (LCC) Benghazi plant suffered extensive damage following the fall of Muammar Gaddafi. It is undergoing extensive renovation, along with LLC's other damaged plants.

Libya

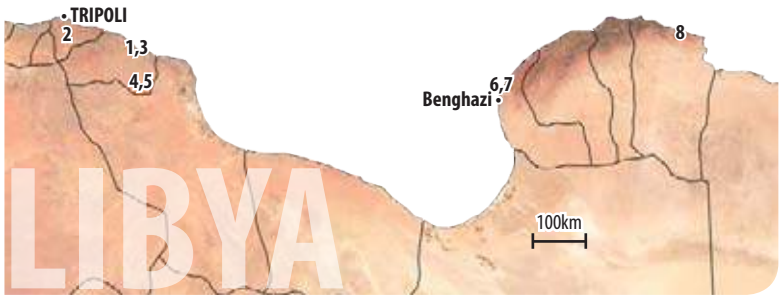
Libya gained independence in 1951 after successive occupation by the Roman Empire, Arabic influences, the Ottoman Empire and, finally, Italy. Upon independence Libya was ruled by King Idris until his overthrow in a military coup in 1969. The leader of the coup, Muammar Gaddafi, then ruled the country with increasing authoritarianism until he was ousted and eventually killed by revolutionary forces in 2011. Gaddafi's long period in charge and subsequent removal from power left a deep power vacuum in Libya, with rival factions competing for power in the aftermath. Some areas are outside of government control and the situation remains fluid.

Cement sector - Introduction

Libyan cement production has varied greatly over the past decade, as shown in Figure 7. The decline in cement production, from 7Mt in 2008 to around 2Mt in 2014 can be attributed to three factors. Firstly, the global financial crisis hit oil prices, on which the economy depended. Secondly, the political events of 2011 led to widespread destabilisation of the country and a severe contraction in construction activity. Thirdly, several cement plants were damaged in fighting, of which more below.



Above - Figure 7: Libyan cement production (2000-2014) and GDP/capita (2000-2011). **Sources:** United States Geological Survey, World Bank Data Indicators.



Below - Figure 8: Locations of Libyan cement plants.
Source: *Global Cement Directory 2019.*

1. Ahlia (Arab) Cement, Marqab, 0.3Mt/yr.
2. Ahlia (Arab) Cement, Suk Elkamis, 1.0Mt/yr.
3. Ahlia (Arab) Cement, Lebda, 1.0Mt/yr.
4. Ahlia (Arab) Cement, Zliten, 1.0Mt/yr.
5. Arab Union Contracting, El Borj, 1.4Mt/yr.
6. Libyan Cement, Benghazi, 0.9Mt/yr.*
7. Libyan Cement, El Hawari, 1.0Mt/yr.*
8. Libyan Cement, El Fataih, 1.1Mt/yr.*

Notes: All plants are integrated facilites. * Libyan Cement plants were extensively damaged in the period 2011-2016 and are effectively closed. They are currently undergoing renovation.

Cement sector - Producers

Libya has the smallest cement industry of the five in this review. It has eight integrated cement plants that share just 7.7Mt/yr. All are operated by local firms, a legacy of long periods of government control. They are listed in Figure 8.

The largest producer by active capacity is Ahlia (Arab) Cement, which operates four integrated cement plants that share a capacity of 3.3Mt/yr. This represents around 43% of national capacity. The second-largest producer, on paper, is Libyan Cement Company (LCC). It has a nominal capacity of 3.0Mt/yr. However, its plants have been effectively closed since 2011. This is due to their location in the east of Libya, which saw the worst of the fighting post 2011. The three plants, most notably Benghazi and El Hawari, saw conflict damage, theft of equipment and a gradual slip into decay brought about by inactivity.

LCC is in the process of fully renovating each plant. Its website states that its Al Fataih plant was due to be fully renovated by the close of 2018, with its Benghazi Line 2 and Hawari Line 1 scheduled for repair during 2018 and 2019. In the medium term it will repair the Hawari Line 2, upgrading its capacity in 2020. Benghazi will also receive a new Line 4, to replace Lines 2 and 3 in the period to 2022.

The third-largest player in the Libyan cement market is Arab Union Contracting, which operates a single 1.4Mt/yr plant (the largest in the country) at El Borj.

In the future, Libyan cement capacity may grow further, in addition to the developments at LLC. In May 2018 it was reported that German investors had met with the mayor of Al-Bayda to discuss building a cement plant in Cyrenaica. It was reported that a proposed cement plant with a production capacity of 4000t/day, would be built to the south of Al-Bayda, according to the Libya Observer. Further updates on this project have not been forthcoming.

Morocco

Like its neighbours, Morocco has had a variety of rulers over the years. Following the Arab conquest of north Africa in around 700, a series of Moroccan Muslim dynasties ruled over the country. In the 1860s, Spain occupied the northern part of Morocco before the French imposed a protectorate over the country in 1912. Following a struggle against France, Morocco became independent in 1956.

The 'Arab Spring' political unrest of 2011 that was seen across north Africa was partially placated in Morocco after King Mohammed VI ordered a referendum on a new constitution that satisfied some of the demands of the protesters. Disquiet remains, although the country remains one of the most stable in the region.

Cement sector - Introduction

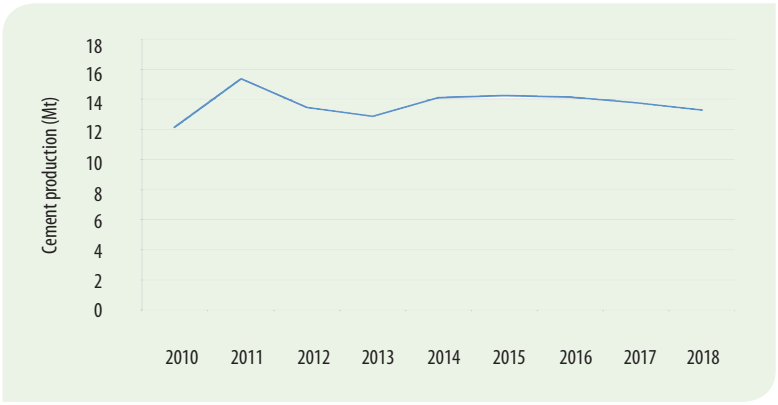
Morocco has a relatively well-developed cement industry that has seen significant addition of new capacity over the past 20 years. In 2019 it has 14 integrated cement plants (24.6Mt/yr) and five grinding plants (5.4Mt/yr). The sector is dominated by the multinational cement producers LafargeHolcim, Italcementi and Votorantim, which have a stake in 16 of the 19 facilities, including all active grinding plants. When adjusting for the stakes held in their subsidiaries, this corresponds to 14.5Mt/yr of the country's 30.0Mt/yr capacity, or 48% of capacity. The main Moroccan-owned cement producer is Ciments de l'Atlas (CIMAT), which operates two integrated facilities. It has a growing influence in West Africa.

Moroccan cement production fell by 0.5Mt to 13.3Mt in 2018, compared to 13.8Mt in 2017, a year-on-year fall of 3.8% (See Figure 8). Cement production peaked in the country in 2011, when it reached 15.4Mt.

Cement sector - Producers

The largest cement producer in Morocco in 2019 by installed capacity is LafargeHolcim. Through its 34.93% stake in Lafarge Maroc (12.3Mt/yr) and its 61% stake in Holcim Maroc (5.4Mt/yr) it has an interest in an effective 7.6Mt/yr of capacity across seven integrated and three grinding plants.

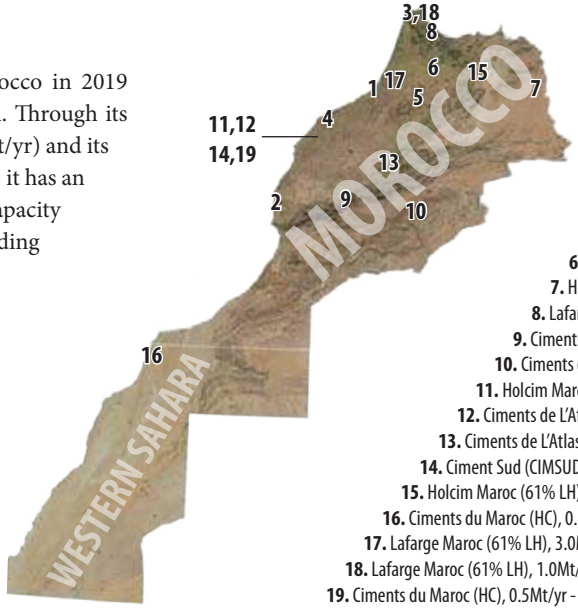
The second-largest producer is HeidelbergCement, which operates three integrated plants (5.1Mt/yr) and two grinding plants (1.0Mt/yr). Third-largest is CIMAT, based in Morocco. It runs identical 1.6Mt/yr plants at Beni Mellal and Settat. These and the other Moroccan cement plants are shown in Figure 9.



Above - Figure 8: Moroccan cement production (2010-2018). **Source:** L'Association Professionelle des Cimentiers du Maroc.

The plants shown in Figure 9 will be added to in the future, as China's CBMI is building a grinding plant for LafargeHolcim near to Agadir. The deal for the SSS 13 & 14 Grinding Plant EPC Contract was signed on 21 March 2018 at the LafargeHolcim Technology Centre in Lyon, France. Once operational the plant will be run by LafargeHolcim Maroc.

Left: The CIMAT plant at Beni Mellal, as seen from near its quarry. **Source:** CIMAT website.



1. Asment de Témara (Votorantim), 1.3Mt/yr - **I**.
2. Ciments du Maroc (HC), 1.0Mt/yr - **I**.
3. Lafarge Maroc (34.93% LH), 1.0Mt/yr - **I**.
4. Lafarge Maroc (34.93% LH), 3.0Mt/yr - **I**.
5. Lafarge Maroc (34.93% LH), 1.8Mt/yr - **I**.
6. Holcim Maroc (61% LH), 1.9Mt/yr - **I**.
7. Holcim Maroc (61% LH), 1.3Mt/yr - **I**.
8. Lafarge Maroc (34.93% LH), 2.5Mt/yr - **I**.
9. Ciments du Maroc (HC), 1.4Mt/yr - **I**.
10. Ciments du Maroc (HC), 2.2Mt/yr - **I**.
11. Holcim Maroc, (61% LH), 1.8Mt/yr - **I**.
12. Ciments de L'Atlas (CIMAT), 1.6Mt/yr - **I**.
13. Ciments de L'Atlas (CIMAT). 1.6Mt/yr - **I**.
14. Ciment Sud (CIMSUD, 2.2Mt/yr - **I**.
15. Holcim Maroc (61% LH), 0.4Mt/yr - **G**.
16. Ciments du Maroc (HC), 0.5Mt/yr - **G**.
17. Lafarge Maroc (61% LH), 3.0Mt/yr - **G**.
18. Lafarge Maroc (61% LH), 1.0Mt/yr - **G**.
19. Ciments du Maroc (HC), 0.5Mt/yr - **G**.

Left - Figure 9: Moroccan cement plants. **Source:** *Global Cement Directory 2019.*

I = Integrated.
G = Grinding.

LH = LafargeHolcim.
HC = HeidelbergCement.

Tunisia

Like Morocco, Tunisia was a French colony until it gained independence in 1956. The country had two long-standing leaders, Habi Bourguiba (1956-1987) and Ben Ali (1987-2011), both of whom presided over gradual improvements to living standards, albeit with increasingly autocratic tendencies. Ben Ali was toppled by the first of the popular uprisings of 2011 in what went on to become the Arab Spring. Disruption followed for several years, which stifled economic development. A semblence of stability was restored in 2014, when Beji Caid Essebsi was elected in national elections.

Right - Figure 10: Tunisian cement plants.
Source: *Global Cement Directory 2019.*

All plants are integrated.
W = White cement.

1. Ciments Artificiels Tunisiens, 1.0Mt/yr.
2. Ciments de Bizerte, 0.8Mt/yr.
3. La Cimenterie de Djebel El Ouest (Votorantim), 1.2Mt/yr.
4. Les Ciments d'Oum El Kélil, 0.9Mt/yr.
5. Société des Ciments de Gabés (SECIL), 1.4Mt/yr.
6. Société des Ciments d'Enfida, 1.7Mt/yr.
7. Carthage Cement, 2.3Mt/yr.
8. Ciment de la Méditerraneé Gafsa, 3.0Mt/yr.
9. SOTACIB, (65% Cementos Molins), 0.7Mt/yr - **W**.
10. La Cimenterie de Djebel El Ouest (Votorantim), 1.8Mt/yr.

Cement sector - Producers

Tunisia's cement sector is the second-smallest among the countries considered in this article after Libya. It has 14.8Mt/yr of cement capacity from 10 integrated cement plants. There are no grinding facilities.

The joint-largest producers by installed capacity are Votorantim (through its subsidiary La Cimenterie de Djebel El Ouest) and Ciment de la Méditerraneé Gafsa (CMG), both of which operate 3.0Mt/yr of cement capacity. Votorantim has two plants (1.2Mt/yr and 1.8Mt/yr), whereas all of CMG's capacity is within a single facility.

The third placed producer in Tunisia is Carthage Cement, which operates a single 2.3Mt/yr plant. The government is currently attempting to sell its 50.5% share in the company. However, the sale has been delayed following the latest round of bidding, which ended on 7 December 2018. It was reported that none of the pre-selected bidders was able to submit a qualifying financial offer.

The other cement producers active in the Tunisian market are shown in Figure 10. They do not include many of the major multinationals, for example, HeidelbergCement, LafargeHolcim and Cemex, that are present in many of the other North African markets. They are mainly local firms that operate single plants, only within Tunisia.

The plants shown in Figure 10 will shortly be joined by United Cement Investor, which will begin construction of a new 1.5Mt/yr integrated plant in Bir Thlathin, Tatouine in March 2019. Local investment will total around US$95m. The project is expected to create 419 direct jobs and 600 indirect jobs. thyssenkrupp Industrial Solutions (France) has been involved with the project, with investment from Tunisian, Emirati and German financiers. IBITEK Group has been selected as the supplier of the plant's complete electrical, automation and BI system, including a new captive power plant.

Ciments de Bizerte is also in the process of upgrading its cement capacity. It announced in June 2018 that it would upgrade the cement grinding capacity of its Bizerte plant by 20%, taking the capacity at its plant in Bizerte to just shy of 1.0Mt/yr. Other anticipated upgrades include the installation of a new 10,000t cement silo and the construction of a captive wind farm.

Right: Carthage Cement plant. A 50.5% stake in the plant remains up for grabs after it failed to sell in 2018.
Source: www.ekonas.com.tr.

Here *Global Cement Magazine* presents its monthly review of global cement prices, in US$ for easy comparison. Additional price information is only available to subscribers to *Global Cement Magazine*. Subscribe on Page 64. In this issue subscribers receive extra prices from China, Southern Africa, The Gambia, Libya, the US, the Philippines and Thailand.

Prices are for metric tonnes (t), unless stated otherwise. US$ conversions from local currencies are correct at the time of original publication.

Egypt: Ordinary Portland Cement prices as of 8 February 2019: Arabian Cement (Al Mosalah) = US$47.43/t; Arabian Cement (Al Nasr) = US$46.18/t; Building Materials Industries Company = US$46.18/t; Elnahda Cement = US$45.45/t; Lafarge (Al Makhsous) = US$46.47/t; Medcom Aswan Cement = US$45.45/t; Suez Cement (Al Suez) = US$46.30/t; Tourah Portland Cement (Tourah) = US$46.75/t; Helwan Cement (Helwan) = US$46.75/t; Shora Cement (Al Shora) = US$45.35/t; El Sewedy Cement = US$47.74/t; South Valley Cement (Ganoub El Wady) = US$45.92/t; Misr Cement Qena (Al Masalah) = US$45.46/t.

White cement prices as of 8 February 2019: Sinai White Cement (Alabid Elada) = US$115.08/t; Sinai White Cement (Super Sinai) = US$107.98/t; El Menya Cement - Super Royal = US$106.56/t; El Menya Cement - Royal Elnada = US$109.40/t; Menya Helwan Cement = US$106.56/t. Blended cement prices as of 8 February 2019: Helwan Cement (Alwaha) = US$41.20/t.

Sulphate-resistant cement prices as of 8 February 2019: Lafarge (Kaher Albehar) = US$48.87/t; Suez Cement (Al Suez Sea Water) = US$48.19/t; El Sewedy Cement (El Sewedy Almukawem) = US$49.44/t.

DRC: The price of cement in the city of Kamina, south-central DRC rose from an already extraordinary US$22.49-25.53/bag (50kg) at the start of January 2019 to US$27.35/bag, a rise of 7-21% in around four weeks. Local traders report that this is due to a shortage of cement brought on by the impassability of National Highway No. 1, a major obstacle to deliveries of a wide range of supplies.

Latin America: Cemex reported that its prices in South Central America and the Caribbean increased by 3% in local currency terms during 2018 compared to 2017. They were up by 1% in US Dollar terms.

Europe: Cemex reported that its cement prices in Europe were 2% higher in 2018 than in 2017 in Euro terms. They were just 1% lower in the UK due to poor economic performance ahead of Brexit.

India: E T Markets reports that all-India average cement prices increased about 4.5% between the first weeks of January and February 2019 to US$4.63/bag (50kg). Cement prices in the northern, western and central regions were stable, in the range of US$4.07-4.91/bag. In the south, prices rose by US$0.28-0.35/bag, while they rose by US$0.14-0.21/bag in the east.

As of the first week of February 2019, the average price of cement was US$4.21/bag in the north of India, US$4.60/bag in central regions, US$4.78/bag in the east, US$4.28/bag in the west and US$4.84/bag in the south.

A sudden spike in cement prices was reported in parts of the state of Andhra Pradesh and Telangana at the start of February 2019, leading to local disquiet among traders and the public. On 1 February 2019 the average price of a 50kg bag of cement was US$3.16/bag. By 6 February 2019 it had risen to US$4.36-4.56/bag, according to T Sivaji, the local chairman of the National Real Estate Development Council for Visakhapatnam.

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Don't argue with a balance sheet, just face reality.

Robert McCaffrey Editorial Director, ***Global Cement Magazine (rob@propubs.com)***

I can tell you the three most fundamental things you need to know about business in less than 30 seconds. They are hard-won and expensive lessons, but any business that does not apply them will soon be bust. They are as follows:

- Make things that people want to buy;
- Bring in more money than you spend;
- Have money to spend when you need it.

Okay, there are some details that I have left out, but these are the basics. You have to provide something that people are willing to pay you for. It has to cost you less than people are prepared to pay for it, to give you a profit margin. It's no good having US$1m coming to you next week if you need it today. As they say, 'Revenue is vanity, profit is sanity, cash-flow is reality.'

A loss will be a loss, and a profit a profit. Billy Connolly, a seemingly down-to-earth Scottish comedian, after relating a story about swimming off his yacht, said "You can't hide the profits forever." In the same way, you can't hide the losses forever either. No business can afford to make an ongoing loss, since its owners or shareholders will eventually run out of patience, money or both. All real businesses are run for the benefit of their shareholders and if there is no benefit being derived and none in prospect, then the shares and the company are worthless. If the company makes an ongoing loss, then it is worse than worthless: you may as well just throw your money onto a bonfire. In such a case, the only sensible thing is to close the business. We've seen that in the case of several cement companies recently, where a loss-making factory is simply closed. I think that we will see more of this happening in the future, as CO_2 permit costs rise and overcapacity bites.

A loss is a loss and a profit a profit, unless you enter the crazy world of the state-backed company. These cement companies, which include those backed by agencies of the state (such as the military, as in Egypt and Iran), those actually owned by the state (either built by the state or expropriated, as in Venezuela and Cuba) or explicitly or implicitly backed by government (such as various of the Chinese cement companies) are perfectly able to withstand ongoing losses, since they are backed by a shareholder with theoretically bottomless pockets: if they need more money, they just put taxes up. If you don't pay your taxes, you may end up in jail, so it's generally a reliable source of funds for the state.

A cement company can theoretically stumble on, neither making profits or losses, or making a small profit one year and then having it gobbled up the next (usually by 'increasing fuel and transportation costs' or 'increased taxes and tariffs' - we've seen all the excuses), for many years. These 'zombie' companies would have defaulted in a normal economic cycle but continue to function due to today's ultra-low interest rate environment. They are able to pay the interest on their debts, but they are unable to pay off the principal. To close them would be to crystallise their losses: the lenders (the banks) would lose the value of the loans (and us taxpayers might end up having to bail them out - again). The banks will have done their due-diligence: they should know that lending money to help build a cement factory that contributes to oversupply will depress prices so that the profit margin for all players in the market reduces or turns negative. However, there are such juicy fees for arranging loans and there are the reliable interest payments on the loans for decades to come: who could resist?

The other thing about zombie companies is that they do have an economic role: they provide jobs for the workers at the cement plant, and for the various contractors that a cement plant relies upon. Each Dollar or Euro paid to the workers is spent on further goods, spreading out in a valuable multiplier effect. That's one of the reasons why money spent on building concrete-based infrastructure has a general positive effect on the wider economy. (It does at the moment - but with increased automation and reduction in manpower in the cement and concrete industries, there will be less and less of the multiplier effect in the coming years). There's also the potential loss of face in closing a factory: only the most steely-eyed government minister will countenance closing a marginally-profitable zombie company.

The decision to cease production of the magnificent A380 aeroplane, after having large amounts of money pumped into the project by various governments, is a case in point. A lot of 'face' and thousands of jobs will be lost when Airbus stops making the plane in 2021. The plane has never made a profit and now it never will. I remember a few years ago boarding an A380 for a flight to the Middle East and being surprised, 20 minutes later, looking up from my newspaper, to find that we were already airborne. Now it will be consigned to the Apollo-Concorde era of 'how did we ever afford that'? However, you can't hide the losses forever.

For the A380 and some cement plants, when the merry-go-round ceases to turn, it's time to get off.

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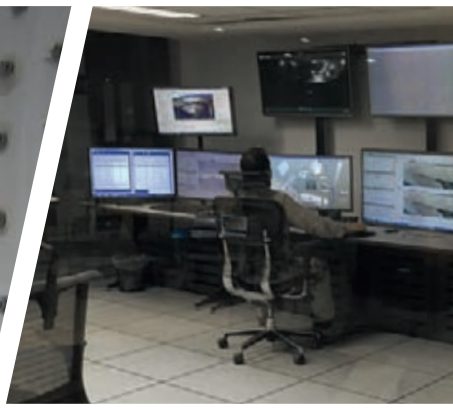

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